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The Anne MacKenzie Oration.[1]

THE PROBLEM OF MATERNAL WELFARE.

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Sydney.

THE subject chosen each year for the Anne MacKenzie Oration has been one of vital interest to the development of Australia, but there could be no question of more burning importance than that of the welfare of the mothers of the nation. Nor could the life and work of a noble woman be better commemorated than by focusing attention on the fact that, notwithstanding improved education of doctors, medical students, midwives and of the public generally, of greatly improved hospital systems and sanitation, women are still dying in lamentably large numbers of the complications of childbirth in this country. If the public conscience could be so touched that all bodies and individuals interested and implicated in this subject should make an intensive study of the problems involved, one might expect a result which would be a worthy memorial to a gracious lady who was herself first a mother and who was privileged to be the mother of a great Australian whose name will live in the history of science.

It is difficult for me to express the sense of high honour which I feel in having the privilege of giving the Anne MacKenzie Oration for 1935, more especially as the study of obstetrics, with its allied problems, occupies the major part of my working time, and so is one of the most absorbing interests of my life.

[1] Delivered at the Australian Institute of Anatomy, Canberra, on March 4, 1935.

Statistics.

The vital statistics of the Commonwealth show that the position in Australia is alarming. The contents of the accompanying tables refer only to deaths of mothers and exclude the large groups of women who recover from the ailments and accidents associated with childbirth, only to carry on the rest of their lives crippled and more or less useless, unless restored by painful surgical operations.

Tables I, II and III reveal the disquieting fact that in the Commonwealth, amongst women confined of full-time babies, one woman in every two hundred dies, or, including those who die after illegal operations, one in every 180.

TABLE I.

Deaths from Puerperal Causes, 1931 and 1932.

Commonwealth as a Whole.

(Commonwealth Statist's Figures.)

Year and Group.	Number.	Rate per 1,000 Live Births.	Ratio.
1931. Excluding illegal operations ..	579	4·89	1 in 205
1932. Excluding illegal operations ..	530	4·78	1 in 209
1931. Including illegal operations ..	650	5·48	1 in 182
1932. Including illegal operations ..	618	5·57	1 in 179

TABLE II.

New South Wales.

(From Year Book of New South Wales: Official.)

Year and Group.	Number.	Rate per 1,000 Live Births.	Ratio.
1931. Excluding illegal operations ..	243	5·09	1 in 196
1932. Excluding illegal operations ..	226	5·03	1 in 199
1931. Including illegal operations ..	288	6·03	1 in 166
1932. Including illegal operations ..	276	6·14	1 in 163

TABLE III.

New South Wales for Five Years, 1926 to 1930.

(From Year Book of New South Wales, 1931–1932, page 169.)

Year and Group.	Number.	Rate per 1,000 Live Births.	Ratio.
Excluding illegal operations	1,342	5·03	1 in 199
Including illegal operations	1,537	5·76	1 in 174

In New South Wales the figures are even worse, for, including deaths from illegal operations, approximately one in 160 parturients die.

Table IV shows the percentage of deaths amongst *primigravida* in Sydney and in New South Wales in the five-year period 1928 to 1932. It shows that of all first confinement deaths from puerperal causes among married women in the five years 1928 to 1932, 34% occurred in the metropolis, while the rate was 28·9% for the State as a whole.

TABLE IV.

Mortality among Primigravidæ, 1928 to 1932.

New South Wales.

Year.	Metropolis.		New South Wales.	
	Total Married.	*Primigravidæ.*	Total Married.	*Primigravidæ.*
1928 ..	119	59	296	96
1929 ..	127	42	261	79
1930 ..	125	42	280	77
1931 ..	112	26	254	61
1932 ..	114	34	234	70
Total	597	203	1,325	383

Average percentage mortality of married women with no previous issue: 34·0 in the metropolis and 29 (exactly 28·9) in the whole State.

Table V shows the deaths in New South Wales during the period 1927 to 1931 from: (i) puerperal septicæmia, (ii) septicæmia following abortion, and (iii) abortion.

TABLE V.

Maternal Mortality (excluding Illegal Operations), 1927 to 1931, in New South Wales.

Number of Maternal Deaths (all Causes).	Causes.	Number.	Percentage to Total Puerperal Causes.	Ratio.
1,349	Puerperal septicæmia.	276	20·4	1 in 5
	Septicæmia following abortion	170	12·6	1 in 8
	Abortion	46	3·4	1 in 29
	Total	492	36·4	

Table VI shows the incidence of mortality from illegal operations in New South Wales. In the period 1923 to 1927 the total from this cause was 12·5% of the total maternal deaths; in the 1928 to 1932 period it was 13·8% of the total, showing an increase of 10·4%.

Table VII shows the ages of women dying from puerperal causes in 1932 in New South Wales. Of 234 married women who died from puerperal causes, 119, or approximately 51%, were under thirty years of age, in the flower of womanhood.

TABLE VII.

Showing Particulars of 324 Married Women who Died in New South Wales in 1932 from Puerperal Causes.

Group.	Number.	Percentage.
Under 30 years of age	119	50·8
From 20 to 30 years of age	104	44·4
Mothers with no previous issue	70	29·9

NOTE.—Single women are not included; the figures would not be exact.

Table VIII presents a complete analysis of the causes of maternal mortality in New South Wales in the period 1927-1933.

TABLE VI.

Maternal Mortality in New South Wales, 1928 to 1933.
Showing the incidence of mortality from illegal operations.

Year.	Total Births.	Total Deaths.	Death Rate per 1,000 Births.	Ratio of Deaths to Births.	Deaths from Illegal Operations.		
					Number.	Percentage to Total Maternal Deaths.	Ratio of "Illegals" to Total Maternal Deaths.
1928	54,800	(*a*) 295 (*b*) 327	(*a*) 5·4 (*b*) 6·0	(*a*) 1 in 186 (*b*) 1 in 168	32	9·8	1 in 10
1929	52,672	(*a*) 245 (*b*) 278	(*a*) 4·6 (*b*) 5·3	(*a*) 1 in 216 (*b*) 1 in 189	33	11·9	1 in 8
1930	52,136	(*a*) 260 (*b*) 304	(*a*) 5·0 (*b*) 5·8	(*a*) 1 in 201 (*b*) 1 in 171	44	14·5	1 in 7
1931	47,724	(*a*) 243 (*b*) 288	(*a*) 5·1 (*b*) 6·0	(*a*) 1 in 196 (*b*) 1 in 166	45	15·6	1 in 6
1932	44,905	(*a*) 226 (*b*) 276	(*a*) 5·0 (*b*) 6·0	(*a*) 1 in 199 (*b*) 1 in 163	50	18·1	1 in 6
1933	44,195	(*a*) 212 (*b*) 246	(*a*) 4·8 (*b*) 5·6	(*a*) 1 in 208 (*b*) 1 in 180	34	13·8	1 in 7

(*a*) Excluding, (*b*) Including illegal operations.
Summary of deaths from illegal operations, 1923 to 1932:
1923 to 1927 was 12·5% of total maternal deaths.
1928 to 1932 was 13·8% of total maternal deaths.
Equals an increase of 10·4% in latter quinquennium.

TABLE VIII.

Maternal Mortality in New South Wales.

Cause of Death.	Deaths 1927 to 1931.		Deaths 1932.		Deaths 1928 to 1932.		Deaths 1933.	
	Number.	Rate per 1,000 Births.	Number.	Rate per 1,000 Births.	Number.	Rate per 1,000 Births.	Number	Rate per 1,000 Births.
Accidents of pregnancy	121	0·46	24	0·53	118	0·47	26	0·59
Puerperal hæmorrhage	186	0·71	39	0·87	191	0·76	31	0·70
Puerperal septicæmia	276	1·06	26	0·58	221	0·88	34	0·77
Post-abortive septicæmia	170	0·65	33	0·73	181	0·72	32	0·73
Albuminuria and eclampsia	316	1·21	61	1·36	294	1·16	51	1·15
Phlegmasia alba dolens, embolism, sudden death	122	0·47	16	0·36	114	0·45	16	0·36
Other casualties of childbirth	158	0·60	27	0·60	150	0·59	22	0·50
Total (excluding illegal operations) ..	1,349	5·16	226	5·03	1,269	5·03	212	4·80
Illegal operations	200	0·77	50	1·11	204	0·81	34	0·77
Grand total	1,549	5·93	276	6·14	1,473	5·84	246	5·57

Cause of Death.	Deaths 1929 to 1933.			Rate per 1,000 Confinements.		Percentage due to each Cause.	
	Married.	Single.	Total.	Married.	Single.	Married.	Single.
Accidents of pregnancy	123	13	136	0·54	1·06	9·80	9·49
Puerperal hæmorrhage	170	3	173	0·75	0·24	13·55	2·19
Puerperal septicæmia	181	11	192	0·80	0·90	14·42	8·03
Post-abortive septicæmia	151	23	174	0·66	1·87	12·03	16·78
Albuminuria and eclampsia	233	21	254	1·03	1·71	18·57	15·33
Phlegmasia alba dolens, embolism, sudden death	102	3	105	0·45	0·24	8·13	2·19
Other casualties of childbirth	148	4	152	0·65	0·33	11·79	2·92
Total (excluding illegal operations)	1,108	78	1,186	4·88	6·35	88·29	56·93
Illegal operations	147	59	206	0·65	4·81	11·71	43·07
Grand total	1,255	137	1,392	5·53	11·16	100·00	100·00

Plural births are reckoned as single confinements.

Table IX shows maternal mortality, excluding illegal operations, in Australia in the period 1921-1930. (i) The table reviews the maternal death rate due to "puerperal causes" in the ten years ending 1930. The rate was practically stationary all the time at 5 per 1,000 births: that is, one mother lost in every 200 births. (ii) A definite increase in the death rate is seen during the last five years in all parts of the Commonwealth, excepting South Australia. (iii) Proved illegal abortions, if included, would raise the total of maternal deaths in the Commonwealth from 6,529 to exactly 7,097 in the ten years.

A study of Table VIII shows that when one combines the headings puerperal septicæmia and post-abortal septicæmia, sepsis is found to cause much the largest proportion of deaths. One may add to this list also cases certified as *phlegmasia alba dolens*, some of those classed under embolism, and most of those under the headings of illegal operations, and one gets a massive total of deaths from an infection which should be, and is, in the hands

Table IX.

Maternal Mortality (excluding Illegal Operations) in Australia, 1921 to 1930.

State or Commonwealth.	Year.	Total Births.	Total Deaths.	Rate per 1,000 Births.	Increase (+) or Decrease (−) Percentage of Second Quinquennium.
Commonwealth	1921–25	679,180	3,146	4·63	+11·01
	1926–30	657,927	3,383	5·14	
	Total 1921–30	1,337,107	6,529	4·88	
New South Wales	1921–25	272,245	1,289	4·73	+6·34
	1926–30	266,592	1,342	5·03	
	Total 1921–30	538,837	2,631	4·88	
Victoria	1921–25	179,818	778	4·33	+30·25
	1929–30	171,665	967	5·64	
	Total 1921–30	351,483	1,745	4·96	
Queensland	1921–25	100,293	458	4·56	+5·26
	1926–30	96,804	465	4·80	
	Total 1921–30	197,097	923	4·68	
South Australia	1921–25	58,716	323	5·50	−13·45
	1926–30	55,032	262	4·76	
	Total 1921–30	113,748	585	5·14	
Western Australia	1921–25	40,278	171	4·25	+25·88
	1926–30	43,740	234	5·35	
	Total 1921–30	84,018	405	4·82	
Tasmania	1921–25	27,830	127	4·56	+2·85
	1926–30	24,094	113	4·69	
	Total 1921–30	51,924	240	4·62	

Table X.

Deaths from Puerperal Causes, 1931 to 1933, Commonwealth as a Whole.

Year.	Number of Births.	Deaths from Puerperal Causes (excluding Illegal Operations).			Deaths from Puerperal Causes (including Illegal Operations).		
		Number.	Rate per 1,000 Live Births.	Ratio.	Number.	Rate per 1,000 Live Births.	Ratio.
1931	118,509	579	4·89	1 in 205	650	5·48	1 in 182
1932	110,933	530	4·78	1 in 209	618	5·57	1 in 179
1933	111,269	499	4·48	1 in 223	571	5·13	1 in 195
1931 to 1933	340,711	1,608	4·72	1 in 212	1,839	5·40	1 in 185

of capable and conscientious obstetricians and midwives a wholly preventible disease.

The next striking figure is the high percentage of deaths from albuminuria and eclampsia: 316, 294 and 233 in each of the five-year periods under review. University lecturers in obstetrics now teach that eclampsia should be a preventible disease if efficient antenatal supervision is given. This ideal should not be hard of attainment. There must remain, in the present state of knowledge, a proportion of women with chronic renal disease, such as Bright's disease, who are not suitable for childbearing and who will be liable to die under the extra strain imposed on them by pregnancy; but even these may have their lives prolonged by suitable supervision and treatment. A very large percentage of young mothers suffering from albuminuria and eclampsia, especially those with renal disease, give a history of having had scarlatina or diphtheria in childhood, yet the public take little heed of the advice of public health authorities to give to the children the opportunity afforded by science to prevent the occurrence of these acute infective fevers, which are liable to leave a crippling trail behind them. In no branch of preventive medicine can more brilliant results be obtained than by antenatal supervision. Albuminuria is detected early by the regular examination of urine, the warning of impending eclampsia is given by rising blood pressure, malpresentation of the fœtus is revealed and corrected, pelvic measurements reveal disproportion between fœtus and pelvis, chronic infections of the genital and urinary tracts and venereal disease are easily detected, and the presence of constitutional disease and of foci of infection which are likely to be the precursors of albuminuria come within review by a capable physician. Recent researches show much promise of lessening the number of cases of severe albuminuria. Cameron, of Glasgow, has done much research in calcium metabolism and the alkaline content of the blood of pregnant women.

It is evident that much research is necessary, especially in the causation of diseases associated with metabolism in pregnancy. There is a large amount of valuable clinical material in Australia awaiting investigation. There are young scientists with the necessary training and aptitude ready and willing to do the research, but there are no endowments for research in midwifery in any Australian city, although in a few instances there are laboratories suitably equipped awaiting the workers.

Amongst the educated class, especially amongst young women, there is no difficulty about inducing expectant mothers to present themselves for regular examination, particularly when a composite fee to cover such attention as well as the period of parturition and puerperium is agreed upon. But in public maternity clinics and, I believe, in lodge practice, it is still difficult to get women to attend regularly. At the Royal Hospital for Women, Sydney, patients are invited to attend two afternoons a week for antenatal examination, two physicians and several nurses attending each day, and several cubicles are made available for privacy and quick working. During 1933 the number of patients attending the department was 2,300, and the total number of attendances was 6,472. It is evident that to give adequate supervision many more visits would be necessary. The importance of antenatal care is shown in the report of the Royal Hospital for Women (1933) by the fact that of the 37 patients who died in the obstetric section four only had attended the antenatal clinics, two on one occasion and two on two occasions. In passing, and in justice to the report of the hospital just quoted, it is fair to note that of the 37 deaths 16 were due to post-abortal complications, two patients had developed puerperal septicæmia before admission to the isolation block, and ten died within twenty-four hours of admission, being for the most part patients admitted *in extremis*. The report states that, allowing for these deductions, the corrected mortality rate for the year is 0·28%.

At the Melbourne Women's Hospital, at the Queen Victoria Hospital, Melbourne, and for a short time at the Women's Hospital, Crown Street, Sydney, regular Wassermann tests were made on all parturient women. The average incidence of syphilis was found to be 10% in all three centres, so one may take it that this represents the incidence of syphilis in child-bearing women of the class that present themselves at public hospitals in Melbourne and Sydney. Antenatal clinics should be a separate unit from any other service in a hospital, and expectant mothers should not be seen in conjunction with patients in gynæcological clinics; the psychological effect of the presence of patients suffering from pathological conditions is bad for the mother, and she is not likely to make repeated visits amongst sick women. The aim is to impress the mother that pregnancy and labour are natural physiological functions. The general arrangements at the Queen Victoria Hospital, Melbourne, seem to be ideal. The mothers wait in a large, bright, comfortable central hall, pervaded by a friendly atmosphere. A qualified nurse gives a short talk on hygiene and distributes literature, worded simply and to the point. She shows the women how to cut out and make infants' garments. The patients pass into adjoining cubicles to be examined by women doctors; a pathologist is in attendance to take specimens of blood or discharges for examination; a modern X ray apparatus opens directly on the hall, and a qualified technician is at hand to make X ray screenings or to take Röntgenograms if desired. The waiting patients have no sense of fear. This is an important psychological outlook. In this regard Eardley Holland writes, after visiting Sweden, a country famous for the low mortality rate in childbirth:

> Amongst women in this country [England] the dominant emotion towards childbirth is fear—fear not only on the part of the woman who is going to have a baby, but on

the part of her husband and relatives . . . . I am perfectly certain that a large proportion of the long, painful, lingering labours are due to functional disturbances of uterine activity under the influence of fear. It is a point which has not been nearly enough stressed. I believe that Scandinavian women regard childbirth confidently and fearlessly because they have complete confidence in their obstetric services.

Sepsis.

The following figures are taken from De Lee's "Principles and Practice of Obstetrics" (1933):

In 1930, in the registered area of the United States which comprised 94·7% of the total population, 14,836 women died in childbirth, and of these 6,087 died from infection.

Adding to these the deaths in the unregistered areas which are likely to be higher in percentage, also those not registered accurately, either deliberately or from ignorance, De Lee hazards the opinion that 8,000 women die annually in the United States from puerperal infection.

In England and Wales between 1,500 and 2,000 women die annually from puerperal sepsis, and 2,200 to 2,900 from the accidents of labour, but Sir William J. Sinclair asserts that the septic mortality probably varies from 3,000 to 5,000 per year . . . . In Germany about 6,000 women are lost each year from infection, and fully as many more from accidents of childbirth. Van Herff recently called attention to a slight but persistent rising of the mortality from sepsis, which he ascribes to the lack of aseptic practice by physicians and increase in obstetric operating.

"Without doubt", continues De Lee, "and to our discredit, must it be said today one woman in 400 giving birth to a child dies from puerperal infection, a humanly preventible disease."

Historical.

That it is no new disease is shown by the writings of Hippocrates (400 B.C.), Galen, Celsus and other early writers. The description of the disease by Hippocrates could serve for a modern class-room lecture. The custom of primitive peoples of isolating the puerpera, of bathing her in a stream after labour was completed, arises from the collected wisdom of the midwives in an effort to prevent infection. The Mosaic laws appertaining to the lying-in woman are sound and hygienic and are directed to the same end.

The late Dr. McCulloch, of Sydney, in a lecture to the members of the Australasian Trained Nurses' Association, described the procedure he witnessed many years ago when a young gin was being confined in a distant part of western New South Wales. Naturally the observers were at a distance and unobserved by the young mother and her attendants. A flat rock on the river bank was the place chosen for the births among this tribe. The parturient first bathed. Her labour was assisted by her waiting women by pressure on the abdomen with a large flat rock, rolled smooth by the wash of the river for centuries. There was no other aid to labour. When the labour was completed the mother again bathed in the river and rejoined the tribe.

The first authentic report of an epidemic of puerperal fever is given by Hervieux, and is said to have occurred in Leipzig in 1652 to 1665. Lying-in homes were unknown until the establishment of the Hôtel Dieu in Paris. It was founded by religious orders to give shelter during confinement to the homeless, who previously were confined in ditches or by the roadside. Mauriceau, a great obstetrician of the time, states that in 1660 an epidemic of puerperal fever broke out in Paris and in the Hôtel Dieu, and that two-thirds of the women delivered died of it. As late as 1831 the mortality at the Paris Maternité was 9%. Is it any wonder that women dreaded to go to these lying-in homes, and when entering made their farewells as if for ever? The story of the lying-in homes of Paris was repeated throughout Europe and in Great Britain. Even in Sydney in the days of the early settlement one finds the philanthropically minded settlers concerned in the same way about the welfare of poor creatures, often ex-convicts, who were homeless and about to become mothers. So a newly created benevolent association built a refuge for them with a lying-in ward. Almost at once the anguish of an increasing death rate filled the minds of these benevolent directors. They looked round for a qualified nurse to help them in their difficulties. The Governor of the time had sent to England to ask for the services of a lady trained in nursing by Florence Nightingale to take charge of the nursing and housekeeping of the Sydney Infirmary, now the Sydney Hospital. Accordingly, the first matron, Miss Osburn, arrived with five sisters, and from the first group of six nurses whom she trained came a matron for the Benevolent Home, Mrs. Rebecca Graham. She applied the strict discipline and cleanliness so stressed by Florence Nightingale, and under her campaign for clean beds, clean rooms, clean nurses in clean clothing, endemic puerperal fever disappeared.

If the poor mothers had been left alone to bear their children under the gum trees or by the banks of the Tank Stream, many more would have lived than when herded together to be infected one from another. Even now, as then, plans formed by public-spirited people bring an unexpected evil train behind them; and, alas, the example of the good intention is copied so often before the lesson of evil results is learned, and once a custom is established it is hard to break. In this connexion I shall refer later to the ever-increasing clamour for the addition of maternity wards to country and district hospitals, a system which, if persisted in to any large extent without full safeguards, is likely to bring unlooked-for evil consequences.

The cause of puerperal fever was wrapped in mystery till 1847, when Semmelweis, a young obstetric assistant in the clinic in Vienna, announced his belief that it was an infection caused by the absorption of decomposing animal matter into the blood and that such decomposing matter was introduced by the hands or instruments of assistants and midwives. His conclusions were arrived at after years of observation and study. It

was the custom in the different maternities to place dead bodies at the disposal of the universities for study and instruction. Students and assistants made the autopsies and went direct to the lying-in wards in the maternities. In Vienna particularly the autopsies were famous and the instruction was eagerly sought by students, and it was in the Vienna clinic that puerperal fever raged worse than in any other *maternité*. The mortality in the clinic at Vienna was 18% to 31%. At this centre the clinic was divided into two parts, one for the instruction of midwives and one for students. The mortality in the midwives division at the time of Semmelweis's observations was 2·7%, while that for the doctors was 11·4%. The ordinary people knew these facts well, and women assigned to the doctors' clinic would beg to be sent home. However, at the Paris Maternité midwives were permitted to perform *post mortem* examinations, and there the mortality rates were equal in both sections. About this time Professor Kolletschka, a friend of Semmelweis, died of septicæmia, caused by his finger being pricked by a student during a *post mortem* examination. The changes in the organs in the body of Professor Kolletschka were so exactly similar to those in the bodies of women dying of puerperal fever that young Semmelweis was convinced that here was the explanation. As in the case of many other epoch-making discoveries, Semmelweis's theories were not accepted in his lifetime, and after fifteen years of struggle and opposition he died in a hospital for the insane. Semmelweis had the opportunity of seeing his theory tragically proved in the wards of the clinic. Thirteen women in adjacent beds were examined by an assistant and staff. The first had a gangrenous cancer of the neck of the womb and the others were normal cases. Eleven of these women died of puerperal fever. Later the presence of a patient with diseased bone in the knee caused the death of nineteen women in one succession.

It should be noted that in 1842 Oliver Wendell Holmes wrote a paper entitled "The Contagiousness of Puerperal Fever". From clinical data he drew the conclusion that puerperal fever could be induced by contact not only with poisons from dead bodies, but also from contact with erysipelas, and he drew up rules for physicians attending confinements: that they should not attend patients suffering from erysipelas and that they should take no active part in *post mortem* examinations. His wisdom passed unnoticed, but many medical historians hold that he should get the credit for the discovery of the contagious nature of puerperal sepsis.

With Pasteur came new light when he discovered bacteria, and the science of bacteriology commenced. The bacteria living on the animal matter were proved to be the causative factor.

Following this discovery, Lord Lister developed his famous system of surgery, then called Listerism. He performed all operations under a carbolic spray and achieved results which had formerly been thought to be unattainable. The antiseptic era has gradually given way to the aseptic. Under modern aseptic technique any vulnerable cavity of the body may be invaded by the surgeon for repair without fear of infection, even the brain and its membranes, joints, and the puerperal uterus itself.

In the time of Semmelweis women developed puerperal fever from the introduction of gross filth. In our own day, although the filth is not so evident, septic material, equally fatal, finds its way into the blood stream of parturient women.

Modes of Transmission of Sepsis.

It has generally been conceded that sepsis is mostly caused by the introduction of septic organisms on the examining finger of the nurse or doctor, or on instruments; but the organisms may exist in an endemic state in the genitals of the parturient herself and be carried into the higher genital tract by instruments or cause sepsis without any mechanical intervention. There seems to be a certain natural immunity to septic attack in the female genital tract. It is not possible to render the area completely sterile for operative procedures any more than it is possible to use powerful antiseptics on the eye or in the mouth preparatory to operation. Yet eye operations are generally entirely successful if the operative theatre technique is perfect, and the mouth and gums stand up to surgical attack which would produce severe phelgmon elsewhere in the body. The vagina bacillus and possibly other flora of the vagina are believed to be responsible for this protection in the female genitals. Certain customs which have grown to a considerable extent in modern times are liable to interfere with this natural immunity. The more efficient a chemical contraceptive is in its action as a spermicide, the more it will destroy the natural protective bacteria in the vagina. Or, in the case of contraceptives of the occlusive type, when used by women of unclean or lazy habits, it is conceivable that a growth of bacteria will commence which will be inimical to the life of the vagina bacillus, if not actually of a severely infecting type itself.

A certain degree of natural immunity to infection is conferred by taking foods rich in vitamins *A* and *D*. Foods such as butter, cream, milk and cod liver oil are rich in vitamin *A*; yeast is one of the substances taken by humans which contains vitamin *D*. The very poor are unable to get sufficient of these foods, and many wealthy young women deliberately starve themselves of these essential elements by following slimming diet schemes recommended by fashion sheets. Again, the nausea and vomiting which so frequently accompany pregnancy must be a factor in depriving women of necessary immunizing vitamins. Fortunately chemists have now made these vitamins available in concentrated forms. It is probable also that women living in dirty surroundings get a degree of acquired immunity. In this connexion De Lee says:

Medical practices which are without bad results among the poor would, if applied to finely bred women, produce effects horrible to contemplate.

Infection may be air-borne. This has been abundantly proved by bacteriologists from studies after the sweeping of wards and shaking of linen infected with discharges. This is one of the reasons that midwifery patients should not be housed with infectious or general surgical patients, other reasons being the possibility of infection by being handled by the same staff and using the same utensils and linen. In this regard De Lee writes:

From my own experience in private practice, in practice in maternity wards of general hospitals, in a special maternity hospital, and in consultation, from my knowledge of the results of my colleagues . . . from my observation of work done in maternities at home and abroad, from my studies of statistical tables of several countries and a large number of institutions, I have come to the conclusion that puerperal infection . . . is more frequent in maternities that form an integral part of a general hospital than it is in private practice; it is least frequent in the special maternity hospital . . . it is more frequent in January, February and March (northern hemisphere), the time in which the general health of the people is below par, when fresh air and sunshine are at a minimum.

And again:

Air-borne infection is a reasonable assumption, but hospital administrators are very loath to believe it, because acceptance of such a principle would create a moral necessity to build the maternity in absolute isolation and maintain a completely separate personnel, both very expensive.

Droplet infection from the fine spray from the nasal passages and throat of attendants is another source of infection.

A severe outbreak of septicæmia in the Sloane Hospital in New York was traced by Watson and his colleagues to acute infection in the naso-pharynx of attendants. The outbreak followed the admission of a patient in labour with a heavy cold. She developed septicæmia, the first of a tragic series. It was noted that at this time there was an epidemic of influenza in New York, which was associated with inflammation of the ear and mastoid.

An outbreak in a smaller maternity clinic in Sydney a few years ago was traced to a nurse with chronic sore throat infected with hæmolytic streptococci, and continued until the nurse had her infected tonsils treated. The handkerchief and infected pocket can be a source of streptococci carried on to the hands and clothing of the nurse undertaking after-treatment, although scrupulous asepsis may have been observed in the labour room. The adoption of the general surgical principle of using sterile dressing forceps and not fingers for all surgical dressings, if applied to midwifery practice, should minimize, if not completely banish, infection from this source.

It is the custom now to wear gauze masks in labour rooms of maternities as in operating theatres, but the general wearing of masks by nurses in private houses, especially in hot climates, presents difficulties. Persons with infections of hæmolytic streptococci in the naso-pharynx and sinuses should not attend women in childbirth while so affected.

Patients may be self-inoculated, as in the case of a woman with a boil or carbuncle, when the pus may be transferred by her own fingers, or in poor surroundings she may be infected by a dirty bed or bed-fellow.

Women suffering from pathological conditions incidental to pregnancy and who have had hæmorrhages are more prone to septic invasion.

In modern maternity hospitals, if a distinction is made between those patients treated exclusively by the hospital staff, as distinct from those who have been already handled by nurses and doctors outside, one finds all over the world that the mortality from sepsis becomes almost negligible. Some of these institutions arrange for their staff to attend patients in their own homes and, by carrying the same aseptic principles into the home but at the same time limiting the field of operation, excellent results are obtained in circumstances and surroundings which from a hygienic point of view could hardly be worse.

In the out-clinic of Queen Charlotte's Lying-in Hospital, London, in 1907-1908, 4,165 women were delivered without a death from infection. In the first 7,000 cases of the Chicago Lying-in Hospital Dispensary Service one woman died of infection and there was a series of 3,990 cases without death from any cause.

The Women's Hospital, Crown Street, Sydney, has an external department or "district" service of this nature. During the three-year period 1932 to 1934 there were 495 women confined in their own homes and attended by the staff of this hospital. One died, death occurring eight minutes after delivery, the cause of death being embolism. Of these 495 patients only 12 showed evidence of morbidity. (The British Medical Association recommends as a standard for morbidity: "All fatal cases and all cases in which temperature exceeds 100° F. in any two of the bi-daily readings from the end of the first to the eighth day after delivery.")

The report of the King Edward Memorial Hospital, Perth, Western Australia, states that the maternal mortality for 1934 was nil in a total of 1,128 cases.

In this country there is a small army of excellent trained nurses who succeed in converting the bedrooms of mothers into the nearest approach they can achieve to the labour room of a modern maternity hospital. And they do this at their own expense, providing themselves with sterile gowns, towels, rubber gloves, and nests of enamel basins and trays. They get little cooperation from the public, who, for the most part, fail to appreciate the value of these precautions and find cause for complaint in the cost of the extra fuel or gas used in sterilizing these utensils, and reflect longingly on the time when the midwife did the family

washing and cooked the husband's meals as well as nurse the patient. The public need educating out of parsimony in connexion with midwifery in the home.

How, one might ask, can such splendid results occur in the "district" or "dispensary" patients of large maternity clinics in poor areas? It is done by selecting the patients to be so treated through the antenatal clinics in the first instance, abnormal patients being referred to the hospital. But the district nurse sees that all unnecessary hangings and furniture are removed from the bedroom. The bed is furnished with clean linen and the patient, after bathing, is clothed in clean clothing. A careful toilet is made for the patient. Internal examinations are not made or are as few as possible in the circumstances of a given case. The case is left to nature as much as possible. The only operations that should be done under these conditions are the application of "low forceps" or repair of the perineum. Patients requiring other operative procedures are referred to hospital. Packets containing sterile towels and pads may be bought in air-tight cartons similar to wound dressings, but they are expensive. A service, either municipal or in association with hospitals, where prospective mothers, midwives or doctors could have towels and dressings sterilized for a small fee as a right rather than as a favour, as at present, would provide one means of making necessary obstetrical operations in the home a safer proceeding than at present. No surgeon would attempt even the most minor surgical procedure without a proper supply of aseptic linen to surround the area of operation so as to avoid infection of hands and instruments; also aseptic dressings and surgical material to cover the wound. Yet linen fresh from the clothes lines or contaminated by handling, storing or contact with animals, is commonly used, even in well-to-do households, in childbirth. Jellett is of opinion that the use of aseptic linen and dressings should be compulsory, starting, he says, first with doctors. It would be unwise and unfair to put the onus on doctors at the present time, for during the years of depression, especially in industrial areas, doctors have given without any hope of monetary reward an immense amount of service to their old patients, standing to lose not only time, sleep and energy, but petrol, wear and tear on motor car, antiseptics, anæsthetic, cotton wool and drugs, such as ergot and pituitary extract. The service should be municipal, as in many American centres, or organized by some public body, such as a maternal health centre or hospital.

It is interesting to study the system in the Netherlands, where the maternal mortality is low by comparison (for the five-year period 1925-1929 it was 2·98 per 1,000 births, as against 4·21 in England and Wales and 5·57 in the Commonwealth of Australia). It is the custom for patients in labour to be attended by highly trained midwives, who call in a physician to abnormal cases, who, in his turn, sends to hospital all but the patients with the simplest abnormalities. The same conditions appertain in Denmark and Sweden, where the maternal death rates for the five-year period 1925-1929 were 2·74 and 3·21 respectively. To quote the final report of the Departmental Committee of the British Ministry of Health (1932):

> The practice [in Denmark] of doctors is to send abnormal cases to hospital early, even though the abnormality may not be severe . . . delivery of the head with low forceps would be performed, but for more serious conditions both mother and doctor consider hospital treatment indicated.

It is the general custom in this country in all hospital practice and for all conscientious doctors and nurses to wear rubber gloves (which are sterilized by boiling) while attending patients in labour and, if the patients are infected, during puerperium treatment, the hands being first carefully manicured and washed with soap and water and soaked in antiseptic solution. The quality of antiseptics has an important bearing on maternal welfare. A critical analysis of the bactericidal power of common antiseptics shows that many customarily used have a deodorant effect only and do not destroy bacteria. An analysis of some usual antiseptics has been made by the British Medical Association. It would be well if analyses were made and published by State departments.

Dr. Leonard Colebrook, from the Bernhard Baron Memorial Research Laboratories of Queen Charlotte's Hospital, has published results of experiments following preparation of the hands and skin of the patient by first washing with soap and hot water and then using different antiseptics. Some of his results were as follows: In lysol, 1 in 160 (in strong solution it is not tolerated by the skin), hæmolytic streptococci were not completely destroyed, and half an hour afterwards the skin was easily reinfected. In perchloride of mercury, 1 in 1,000, hæmolytic streptococci were not completely killed. In "Monsol" (5% in *adeps lanæ*) streptococci were not killed in thirty minutes. In blue paint, that is, brilliant green and crystal violet, killing of streptococci was complete in thirty minutes, but not in seventeen minutes. One hour after paint was used many organisms survived. In iodine (2% in potassium iodide) aqeuous solution hæmolytic streptococci were completely killed in ten minutes and the skin could not be reinfected up to a period of six hours. Unfortunately iodine is not tolerated well in repeated applications to the skin, and many persons have an idiosyncrasy to it, so that severe rashes and constitutional disturbances may follow its use. Colebrook says that the use of "Dettol", a hologen derivative of xylenol (a coal tar product which is dissolved in aromatic essential oils and is miscible with water, recently put on the market by Messrs. Reckitt, of Hull), has given excellent results at Queen Charlotte's Hospital. It may be used in a pure condition day after day, rubbed into the skin and finger nails, without

causing irritation, or it may be used in a thin tragacanth paste containing 30% "Dettol". It does not cause irritation even in the mucous membrane of the vagina. A 1% solution rapidly kills streptococci and *Bacillus coli* even in the presence of pus. No supplies of this new substance are available in Australia, except in the form of samples. The demand is apparently too great to allow of export. If this is, as it seems on paper, the ideal antiseptic for midwifery, it would be well if arrangements were made for its importation to Australia as soon as possible.

Hospitals.

The architecture and equipment of hospitals is a specialized subject. A State department should and does regulate these matters. The main principles are that the midwifery hospital should be a separate institution or, if an annex to a general hospital, it should be an entirely separate unit with a separate staff. There should be a labour room or rooms separate from the after-treatment rooms, also preferably with separate staff. If septic cases occur, they should be in complete isolation, again with a separate staff. All linen from isolation wards should be soaked in antiseptic solutions before being sent to the common laundry. The private nursing home should have all the essential features of the public maternity hospital. A small, badly equipped and ill-staffed nursing home is a greater menace than midwifery in the home, for it possesses all the disadvantages of the home and the added danger of contact infection when patients are housed together. Suitable plans for hospitals and details of proportion of trained to untrained nursing staff in both public and private maternity hospitals, also proportion of nurses to patients, are fully and adequately dealt with by Jellett in "Maternal Mortality" (1929), and his plans should be a guide for public bodies. The licence for nursing homes not of the required standard should be withdrawn, and although much good work has been done in this connexion, more remains to be done.

It is interesting to note the difference in the attitude of mind towards maternity homes as between the days of the Hôtel Dieu and the present day. Then the *maternité* was regarded as a charnel house, while, according to a report by Eardley Holland, made in 1928, on the general conditions of maternal care in Sweden, 30% of all women confined in Sweden during the previous year had had their babies in a maternity hospital.

Anæsthetics.

The administration of anæsthesia in labour was British in origin. Sir James Simpson was the first to use chloroform to ease the pains of labour. He was attacked on all sides, especially bitter attacks coming from the pulpits throughout Great Britain. But when Queen Victoria asked for and obtained chloroform anæsthesia at the birth of one of her children she set the stamp of approval on the new and beneficent procedure. Chloroform is not the ideal anæsthetic in labour; it delays the natural processes and so tends to make an abnormal labour. The administration of chloroform tends to increase the number of forceps cases and is also liable to delay or otherwise to interfere with the third stage of labour—the placental stage. Difficulties in the third stage of labour are the most common causes of *post partum* hæmorrhage and also cause sepsis by the retention of pieces of placenta. Nitrous oxide gas and oxygen are a popular anæsthetic in America, and are effective in that their action is quick and evanescent, and so the patient is relieved of her periodic pains. Ether is often used for the final stage or for operative delivery. Nitrous oxide with oxygen is expensive in this country and the apparatus is bulky and suitable only for hospitals. Hyoscine or scopolamine with morphine is the drug used in the so-called twilight sleep. After its use the baby is born drowsy and may be hard to revive, and cases have been recorded in which the mother's memory has been permanently damaged. Researches among the group of barbiturates have given valuable analgesics, and rectal injections of ether in oil and of "Avertin" have their adherents. In this country there is a keen demand amongst women for anæsthesia and analgesia in labour. On this question the report of the British Departmental Committee states:

> One of the features of Dutch midwifery which must impress a visitor from Great Britain is the attitude towards anæsthesia in labour. We found that the routine practice is to deprecate entirely the employment of general anæsthesia in normal cases. We were told that even the higher classes, who are in a position to command it, rarely ask for it. We found a striking unanimity amongst the teachers and practitioners . . . and several expressed the opinion that recourse to anæsthesia for normal midwifery was bad in that it tended on the one hand to delay natural forces and on the other to increase the tendency to the adoption of artificial aids to delivery. In operative midwifery, of course, anæsthesia is employed as elsewhere.

One learns from the same report that in Sweden obstetricians discountenance the use of anæsthetics and analgesics on account of their liability to interfere with the course of natural labour. The same is true of Italy. One must remember that there may be a difference in racial type, especially in regard to the width of the pelvis in women of different races. Jellett recommends that midwives should be permitted to give chloroform during labour, after being trained in the method of its administration. So, he says, there would be less incidence of operative midwifery, as doctors, he adds, are inclined to get impatient at the long delay or be anxious to go to other patients who need their care, or may be inclined to yield to the importunities of the husband and relatives to end the labour by forceps.

Lieutenant-Colonel P. C. T. Davy, C.M.G., R.A.M.C., quotes a portion of a report from the Louise Margaret Hospital, Aldershot (*Journal of the Royal Army Medical Corps*, January, 1928):

That institutional midwifery is of immense advantage to the woman admits of little argument, but one is inclined to think that perhaps its most incalculable benefit lies (or should lie) in saving her from obstetrical forceps. Removal from anxious relatives under the constant observation of a staff to whom time is no object, and in the atmosphere of calm routine which prevails. Nature, who, after all, is not a bad midwife, is allowed a hand.

If the nurses of the future could all be culled from the educated class (in Sweden those taking a midwifery training are of the leaving certificate standard when entering the training school) and, provided their training is sufficiently long to cover the subject adequately and that the patient has been examined previously by a physician, I see no reason why an anæsthetic, given to the stage of analgesia, should not be administered by nurses in the second stage of labour. Chloroform, however, is a dangerous anæsthetic which requires skill and experience in its administration. Its use has been almost entirely discontinued in the United States of America, both in surgery and midwifery. In the great surgical clinics of North America specially trained nurses give all anæsthetics. I suggest that if the patient had a long first stage, or if she desired analgesia in the first stage, some drug, such as "Sodium amytal" or "Nembutal", or hyoscine combined with morphine, either in single or repeated dose, with nitrous oxide and oxygen, administered by nurses (trained in their administration) during the second stage, would give a comparatively painless labour and would not interfere with the natural processes. In this country the cost of nitrous oxide and oxygen used in this manner would be about eighteen shillings per hour, and the apparatus costs from fifty-five to seventy-five pounds.

In *The British Medical Journal*, December 29, 1934, John Elam contributes a paper on "The Advantages of Nitrous Oxide and Air Analgesia in the Midwifery of General and Hospital Practice". He says that during the previous eleven months an apparatus designed by Dr. Minnitt, of Liverpool, for the administration of nitrous oxide and air had been used with success in 250 cases of labour at the Wellhouse Hospital, Barnett. The apparatus is an adaptation of a McKesson oxygen therapy apparatus. He enumerates the requirements of anæsthesia in labour: (i) There must be satisfactory relief to the patient; (ii) the normal process of labour must not be interfered with; (iii) there must be no danger to the mother or child; (iv) the technique of administration must be one that can be used by midwives and nurses without constant medical supervision and must be one which will assist the nurses in their work; (v) the apparatus must be readily portable and not too expensive either to buy or to use.

A critical analysis of the 250 cases at the Wellhouse Hospital shows that the Minnitt gas-air technique fulfils all these conditions, and the cost of the apparatus in England is at present seventeen guineas, with the likelihood of considerable reduction with greater demand, while the actual running cost in hospital practice has worked out at about two shillings per head, with a slightly higher cost in private practice. Elam states that at the Wellhouse Hospital for the first fifty cases a medical officer was present during the entire time gas and air were being administered. Gradually, however, as time went on and greater confidence was felt in the safety of the method, the nurses took more charge until it became evident that they were perfectly capable of managing a case on their own responsibility. The members of the nursing staff now administer the gas and air to the patients after receiving instruction in its use, so that there is no need for the medical man or woman to be constantly present at the bedside of the patient. Elam quotes the superintending midwife at Wellhouse Hospital as saying:

(1) Unlike my experience with other anæsthetics, gas and air tend to increase contractions; (2) even after long labours there is no evidence of any harm to the child; (3) the patients are enthusiastic; (4) the patient is happier, less excitable, and more controllable; (5) I would prefer my patients to have gas and air in future. They can manage it quite well themselves after a little help and advice.

Elam's conclusions are:

From personal observation of some 250 cases, both in this hospital and in private maternity work, I feel convinced that we have now come to the time when there can be no reasonable objection to all women enjoying the relief which gas and air can give.

Operative Delivery.

Midwifery forceps were invented by an Englishman, Peter Chamberlen the Elder, who was a barber-surgeon, a distinguished obstetric practitioner, and physician to the Court, who died in 1631. The forceps were kept a family secret, and the original pair used by Peter the Elder was discovered in 1813 in a secret space under the floor of a closet in Woodham Mortimer Hall, near Maiden in Essex, formerly the residence of Dr. Peter Chamberlen, a nephew of Peter the Elder. Before its advent many women died undelivered from gangrene and sloughing of the soft parts, due to pressure of the head of the baby, this being the method of death of a royal princess in the time of George III. Its invention brought great lustre to English midwifery and was the factor more than any other, including the introduction of anæsthetics, which transferred the practice of obstetrics from the midwife to the doctor.

The application of forceps requires skill and judgement on the part of the operator, and if strict aseptic technique is observed, in the hands of a competent obstetrician there should not be undue risk in their use when such as indicated.

Another operation which has been much abused is that of Cæsarean section. There is a sense of drama about Cæsarean section which appeals especially to the young surgeon, but the mortality in the past has been very high, especially in cases in which forceps have failed, or in otherwise potentially

infected patients. It is a fashion among young mothers at present to think that Cæsarean section is a short cut to delivery, an idea which is to be deplored, for, apart from the first risk, the uterus is left weakened by a scar, and there is always risk of intraperitoneal adhesions.

The 1933 report of the Royal Hospital for Women shows that in 1,949 births there were 139 cases of forceps delivery and 29 cases of Cæsarean section, and no deaths in either series. The percentage of forceps is high, but the hospital naturally receives abnormal cases needing forceps and also is a training school for students. The improved statistics for Cæsarean section in modern maternity hospitals is due partly to better antenatal observations and measurements, the catastrophe of failed forceps being thus avoided, and also to improved methods of preparing catgut. Attention has been directed by Professor Bulloch and other researchers to the inefficiency of the biniodide of mercury method of sterilizing catgut. The use of catgut prepared by the Bulloch (aqueous iodine) method or of ampoule catgut, each strand having been specially tested and certified as aseptic, is producing the admirable results quoted in the hospital report. It is possible that some of the gross sepsis in normal midwifery, with perineal laceration, occurring in the past may have been due to catgut. The early British obstetricians sutured the perineum with non-absorbable, boilable suture material (usually silkworm gut) passed through all layers of the perineum from one skin surface to the other. However, gynæcological repair operations showed the advantage of putting in a few buried catgut sutures. If this catgut were not completely sterile it might cause gross sepsis. Bacteriologists tell us that after the biniodide catgut has been washed thoroughly with sterile water to dissolve off the surface antiseptic, immense numbers of organisms and even moulds grow freely, and the wonder is that any should survive on whom such catgut was used. The difference in surgical cases after the use of the new method as compared with the old is dramatic.

The most common indication for Cæsarean section is contracted pelvis, a condition which results for the most part from rickets in childhood. Some twenty to thirty years ago Cæsarean section and craniotomy were rare operations in this country. Increased immigration brought to our shores women who had been reared in cold countries and whose skeletal development had been impaired by want of sunlight and by improper food. Contracted pelvis and flat pelvis became common complications in maternity hospitals. Now the incidence of these abnormalities occurs among the native born. One searches for a reason for this. Rickets is a disease of childhood, due to deficiency of vitamin *B* in the food. It causes softening of bone and a resulting flat or deformed pelvis. Mother's milk contains all the necessary elements and vitamins. At the time when the present mothers were babies, bottle feeding with artificial foods was much in vogue. There was an abnormal psychological outlook towards breast feeding. This, fortunately, and largely due to the teachings of Sir Truby King, has given way to a natural healthy viewpoint, and, indeed, mothers are now ashamed if they cannot feed their babies. In the post-suckling stage care must be taken that the food of little girls contains sufficient vitamins and that the vitamins are not destroyed by the method of cooking. The food of civilized human beings tends to be deficient in vitamins *B* and *D*. Another factor which hinders skeletal development of women is the early adolescence of girls in Australia. Where 14 to 16, and even 18, is the common age for adolescence amongst British women, from which stock 95% of Australians spring, 12 is the common age in Australia, the age varying from 10 to 15. After puberty much of the growth and energy of girls is given to the development of their sexual system. It follows that girls should not be subjected to over-study at this age, nor to over-work. There is at the present time a tendency to exploit the labour of young girls. This may have an adverse effect on their fitness for motherhood later.

Illegal Operations and Abortions.

From a study of Table VIII it will be seen that in the period 1927-1933 in New South Wales 519 women died as a result of illegal operations and abortion septicæmia. This is probably far short of the real number, deaths being concealed under other headings. Table VI shows an increase in the percentages of deaths from illegal operations in the five-year period 1928-1932, as against that of 1923-1927. This is a menace which must be combated. In England even a high medical authority has suggested that abortion, as it is so openly tolerated, should no longer be classed as an illegal operation, the suggestion being that it would be less fatal if not done surreptitiously. In Russia abortion is permitted in certain circumstances, such as for the unmarried mother, the wife whose husband is out of work, the mother of many children who is poor and does not desire more children, provided that the operation is done in a State hospital under safeguards outlined by a committee of matrons. Nevertheless accidents and deaths are reported after abortion in Russia. One hopes that the public sense of morality will not descend so low in this country as to permit of the legalizing of abortion. Abortion in this continent is a crime and should be stamped out as other crime is.

Other Causes of Death.

Combined under the general headings of accidents of pregnancy, other casualties of childbirth, puerperal hæmorrhage are all those conditions which call for all the art and skill of the obstetrician. It is not given to him in his work, as to the lawyer, to have time to consult his books and references. Even the general physician has time to review and think over his case, and no conscientious surgeon would attempt to operate without having had special

training to familiarize him with the technique and with difficulties and dangers which he might encounter. Nor would members of the public trust him to do these operations. But the general practitioner is called upon to attend cases of childbirth as soon as he goes into practice, and in a moment he may be faced with the gravest emergency which will call for knowledge and judgement and skill.

In comparing the conditions of training students in Australian universities with those in the Netherlands and Sweden, one finds that in Holland the time allotted to the complete course of medicine is seven years. The training in obstetrics commences in the fourth year and is continued throughout the three subsequent years. During three months the student is resident in hospital and must attend personally twenty cases (five in the hospital and fifteen in the home).

In Sweden the medical curriculum is of eight to nine years' duration. In addition to a thorough course of lectures in midwifery, every student has, during his seventh or eighth year, to reside in the hospital for a period of four months, during which he is not allowed to occupy himself with any other branch of medicine, not even to the extent of attending lectures in any other subject. The medical school hospital is reserved for students only, midwives being trained in other hospitals, and the nursing is done by trained nurses only. The number of cases is ample to allow each student to conduct forty to fifty deliveries.

The report of the Departmental Committee of the British Ministry of Health, from which these extracts are taken, continues:

> As in the Netherlands and Denmark, we are impressed by the amount of time and care which is given by the professor to the personal teaching of the students and to his hospital patients. He lives in the near vicinity of the hospital and appears to spend his whole day there, and has even a bedroom close to the ward, which he uses should a difficult case be likely to require his attention during the night . . . . The residence of the student for four months in the atmosphere of the maternity hospital, living its life in company with the professor, observing his methods of dealing with both serious and slight abnormalities, and being responsible to him for the recording of all his cases, gives him a knowledge of the principles of midwifery far in advance of that obtained by a medical student in this country [England].

In Denmark the medical curriculum is spread over seven years. For the final eighteen months of their course the professor of obstetrics takes the students for five hours a week for clinical lectures, demonstrations and examinations. Each student spends only twenty-four hours in residence in a maternity hospital. However, the final examination does not qualify the students to practise midwifery. Before being allowed to do so, each newly qualified doctor must spend one month in residence and do various obstetrical manœuvres under the supervision of the professor or his assistant. A large number of men take a six months' resident post in a hospital.

In regard to the training of midwives in Holland, the course occupies three years, and there are three training schools only. It is stressed, as it has been in the past by the Australasian Trained Nurses' Association, that by keeping training schools confined to large institutions a higher and more uniform standard is maintained.

In Denmark and Sweden the length of the course of training for midwives is two years. In all States in Australia, except Queensland, the period of training in midwifery is now eighteen months for women without any previous training, and nine months for general trained nurses, where formerly it was twelve months and six months respectively. In Queensland, although the extended time has been agreed to by the training schools and nurses' associations, it has not been officially gazetted. The added time of training has made a very great difference to the quality of candidates presenting themselves for examination by the Nurses' Registration Boards, and no doubt will be reflected in the public welfare. If the system which has prevailed in the past in Holland and Scandinavia, of the practice of midwifery being for the most part in the hands of midwives, were to be generally extended here, it would seem that eighteen months' training would not be sufficient to equip a midwife to handle all emergencies likely to arise, and the time would have to be extended. Under the system which appertains in this country, of most patients being attended by doctors, the present eighteen months' training would seem to be sufficient, for the main responsibility is shifted to the doctor. In the past the State has taken little, if any, part in providing the community with a necessary service of midwives. The nurses have taken the onus on themselves. A nurse had to provide herself with the money (£50 to £60) for a premium to be paid to the midwifery hospital training school, supply herself with the necessary kit, books, uniform and clothing, and work for twelve or eighteen months without salary before she could present herself for examination, and her reward after all is a bare living. During the past year or two most hospitals no longer charge a premium, largely because trainees were not coming forward. The State should take over all this necessary service, and midwives should be paid a living allowance while doing their training. Compare the training of teachers, on which much public money and much care are spent, to that of midwives, and one realizes that the public conscience has not been touched and a public service more necessary than teaching has been carried on by the sacrifice of nurses themselves, for which they have never received due recognition.

The statutory time of training for medical students in Australian States is five years, but all universities have extended the time to six years. The long vacations have also been absorbed in the final three years, making the actual time of training six to nine months longer. In New South Wales, where a large number of public exhibitions is available for students of high merit at the University of

Sydney, the tenure of an exhibition in the Medical School has been extended by the Government from five to six years to enable exhibitioners to complete the longer course.

I am indebted to Professor J. C. Windeyer, of the University of Sydney, for the following outline of the course of study in obstetrics laid out for students of the University of Sydney. It represents the main features of instruction in other Australian universities:

Instruction is given in three separate periods during the fourth, fifth and sixth years of the medical curriculum.

(*a*) The first period: Daily lectures on the principles and practice of obstetrics in the last term of the fourth year.

(*b*) The second period: The main course of practical instruction. In the fifth and early part of the sixth year the students are divided into groups, each group in turn is allotted to obstetrics for a hospital term of ten weeks. During this period the students are in residence in the hospital for four weeks, and during the other six weeks three days out of the five working days in each week are devoted solely to practical instruction in obstetrics. On the other two days they receive instruction in the administration of anæsthetics, a subject which is of great importance in and closely allied to obstetrics.

(*c*) The third period: The refresher course of practical instruction. During the last nine months of the sixth or final year of the medical curriculum the students, grouped as before, again go into residence in an obstetric hospital for a period of two weeks. During this period the student gets more advanced instruction and administers anæsthetics to women during confinement. The students are receiving practical instruction in obstetrics over a period of three months, are in residence for six weeks, and attending confinements for eight weeks, and during the periods of instruction are present at one hundred and twenty confinements. During the year 1933 each student was present at 138 confinements. In addition, they are required to observe and note the treatment of women suffering from the complications of pregnancy. They attend the antenatal and post-natal departments for six weeks, and for one month the wards set apart for the treatment of women suffering from septic infection following abortion or labour. During each year every student receives 550 clinical lectures or demonstrations from the professor or his staff.

This course is much more comprehensive and practical than was the case before the establishment of the Chair of Obstetrics, but to come into line with that of those countries which can boast the lowest rates of maternal mortality it would appear that a longer term of residence in the midwifery hospital is desirable and that the professor should be a full-time officer. The professor in Melbourne has a full-time apopintment, but in Sydney he is a part-time officer. The University of Sydney has passed a resolution that it is desirable to have a full-time professor of obstetrics, but financial stringency has been the barrier so far. The long distance, geographically, between the main clinical schools and the midwifery hospitals in Sydney and Melbourne is also a factor of importance. In medical education generally it is now recognized that the medical school and wards of the hospital should be as close together as possible. To gain this end in Sydney a new medical school has recently been built in close proximity to the Royal Prince Alfred Hospital. This was made possible by a building grant of £50,000 from the Rockefeller Foundation, and the maintenance of the departments was assured by a munificent gift of about a quarter of a million pounds from the late George Henry Bosch, a great benefactor, who has since died and who bequeathed further large sums for the endowment of certain clinical departments at the university. In the park adjoining these buildings are six residential colleges, but the midwifery hospitals are miles away. The residential area around the university is a type which should be able to supply large numbers of patients for a public maternity hospital. It has been suggested that a large modern maternity hospital should be built close to the university, say, on the site of the Institute for the Deaf and Dumb and the Blind, which is within easy walking distance of the medical school, while the inmates of this institution would be better served in a purer atmosphere with more ample playing grounds. Such a hospital should be for the training of medical students only, all nursing being done by trained nurses. Much more clinical material would then be available to students, and a valuable nucleus for continuous post-graduate training would be instituted.

In Melbourne the Women's Hospital is close to the university, but the other clinical schools are miles away. The question of removing the Melbourne Hospital has been under consideration for some years and, no doubt, when this is done there will be increased efficiency with less fatigue for the students concerned.

Lord Moynihan is reported to have said in a speech on November 13, 1934:

Puerperal sepsis is, in my judgement, invariably preventible and, if preventible, why not always prevented?

This represents the direct outlook of the surgeon's mind, but there are many difficulties, social as well as medical and surgical, to be met before attaining this standard of perfection.

Speaking at a meeting of the Section of Obstetrics and Gynæcology of the Royal Society of Medicine, Eardley Holland said that maternal mortality was as low as it was ever likely to be with the present standard of obstetric practice and teaching. If, as they all desired, it was to be further reduced, an entirely new standard must be set up. The new obstetric tradition was only to be obtained by facilities for post-graduate training, such as did already exist in some centres.

At the same meeting Professor Dame Louise McIlroy expressed similar views when she said that undergraduate teaching was still open to a good deal of criticism, and suggested a panel of general practitioners, all of whom would have had post-graduate training in maternity hospitals. This speaker also drew attention to the fact that it is easy to point out the errors of specialists and others, and that this was the bane of the position: all those concerned became critics of each other.

In conclusion, it must be manifest to all that there should be improved obstetric services for the

women of Australia. To give these services will need the combined efforts of many bodies and individuals working in harmony for the common good, and if all those interested—public health authorities, universities, hospitals boards and staffs, educationists, and the public generally—bend their energies to this end, one may confidently expect better maternal statistics at the end of the next five-year period.

Acknowledgements.

The statistical tables in this paper have been prepared from official statistics supplied by the Government Statistician's Department. For the tables and dissections of figures I am indebted to Dr. A. Watson Munro, of Sydney. I desire to thank Dr. Munro for his help and cooperation.

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MUSSEL POISONING.

By C. H. KELLAWAY, M.D., M.S., F.R.C.P. (London).

(*From the Walter and Eliza Hall Institute, Melbourne.*)

THE use of sea mussels as food is occasionally followed by symptoms of poisoning. Excluding allergic idiosyncrasy, which may result in urticaria or gastro-intestinal disturbance, and food poisoning or infectious disease from bacterial contamination of the shell fish, there remains a group of cases in which the nervous system is predominantly affected with parasthesia, paralysis, and sometimes death from respiratory failure.

From time to time in Europe and America outbreaks of this last type of poisoning have occurred, but, so far as I am aware, no such outbreak has been described in Australia. The object of this present communication, in which some of the salient facts concerning paralytic mussel poisoning are presented, is to interest practitioners, particularly those upon the sea coast, in the hope that they may put on record any mild cases they may meet with and, if possible, send for examination mussels suspected of being toxic.

Paralytic mussel poisoning is rather rare. It occurs only in the summer months. Meyer, Sommer and Schoenholz,[1] who give an excellent *résumé* of the literature, record 21 outbreaks in Europe and North America between 1798 and 1928. Ten of these were in Great Britain, two in Prussia, one each in Norway and France, and seven on the Pacific coast of North America. These outbreaks involved a total of 244 persons, 38 of whom died.

The Wilhelmshafen outbreaks of 1885 and 1887 are well known, and most of the text books mention mytilotoxin, a quaternary base isolated by Brieger[2] from material from this source. The studies by Thesen[3] of the Christiania outbreak in 1902, and by Meyer, Sommer and Schoenholz[1] of the Californian outbreak in 1927 have failed to identify with mytilotoxin the toxic substance responsible for paralytic mussel poisoning. Actually by the application of Brieger's method of isolation most of the toxicity of poisonous mussels is lost.

A characteristic feature of these outbreaks is that toxicity appears suddenly in the mussel beds and exhibits a certain periodicity in its appearance and disappearance. At Wilhelmshafen it was present in the summer of 1885, absent between December, 1885, and April, 1886, reached a peak in August, 1886, was absent in the winter of 1886-1887, and reappeared in September, 1887. At Calais, Netter and Ribadeau-Dumas[4] found that the mussels were only toxic from the end of May to the middle of June, and by July 8, 1902, had almost wholly lost their toxicity. The Californian experience is particularly interesting in this respect. The outbreak of 1927 was the most extensive that has been observed, 102 persons being affected, of whom six died. At one place a number of people ate mussels on July 14, 1927, without ill-effects, but mussels collected in the same locality on the following day were highly toxic. Toxicity had disappeared in the beds affected by the end of October. The mussels remained non-toxic throughout the winter, some toxic samples being obtained in two localities in March and in May, 1928. There were, however, no cases of poisoning in this year. Muller[5] has reported the further history of outbreaks in California. In the summer of 1929, 55 persons were affected. In 1930 and 1931 laboratory studies at the Hooper Foundation, San Francisco, showed that certain mussel beds were highly toxic during the summer, but, owing to the imposition of seasonal quarantine, there were only three cases of poisoning. In 1932 there was a further outbreak involving 42 persons.

The species of mussels affected in Europe was *Mytilus edulis*, and in California *Mytilus californianus*. In the European experience, notably at Wilhelmshafen, Christiania and Calais, the poisonous mussels were found in harbours. Schmidtman and Wolff were able to confer toxicity upon non-toxic mussels by placing them in that part of the harbour at Wilhelmshafen where the mussels were toxic. Thesen showed that placing mussels in

water containing curari or strychnine caused absorption of these poisons in the liver of the shell fish; but these experiments do not prove that toxicity is acquired from the surrounding water. Netter and Ribadeau-Dumas were not able to relate the development of toxicity to any such causes. In the Californian outbreak the poisonous mussels all came from the open sea coast, and those collected at the same time from the San Francisco bay were non-toxic. Here they were not exposed to pollution by sewage, nor were they located in places where they were exposed to the sun at low tide. Most of the shell fish which were shown to be poisonous were obtained from places where they were not uncovered at the lowest tide.

No evidence, though this has been diligently sought, has been obtained in any of the outbreaks that toxicity in the mussels is related to bacterial disease of the shell fish. The possibility of a disease of virus origin has not been so clearly excluded. Autolysis in the mussels can be definitely excluded. Absolutely fresh mussels have been shown to be highly toxic on numerous occasions.

The cause of the appearance of toxicity remains wrapped in mystery. In nearly all the outbreaks observers have found that the liver of the toxic shell fish was enlarged, friable and dark in colour. This has naturally suggested the possibility of disease, bacterial or metabolic, in the shell fish. A toxic food supply is a not unlikely explanation, though there is no evidence in support of this view. Another theory that has been put forward is that the toxin is a "sex poison". The toxic mussels in the Californian experience were always full of spawn, and there are some suggestive analogies to be found. For example, the roe of some fish of the sturgeon family is poisonous during spawning. The poison isolated from poisonous mussels in California is similar chemically and in pharmacological activity to the "fugu" poison of Japan, which is derived from the liver and gonads of certain species of *Tetrodon* and which finds application as a convenient and rapid means of suicide (Phisalix[6]). A number of other theories, most of them obviously untenable, have been put forward. Some of these rank as popular beliefs, like that which links toxicity with the "beard" or with the occurrence of parasites on the shell or in the fish.

The symptoms of this intoxication are very striking. Shortly after the ingestion of the poisonous mussels, particularly if these are taken upon an empty stomach, numbness of the mucous membrane of the mouth and numbness or pricking sensations in the finger tips and toes appear. Sometimes a patient feels as though he were walking on air or as though his feet were padded with cotton wool. The early symptoms bear a striking resemblance to those of acute alcoholism. There are incoordination of movements of the limbs, ataxic gait, and incoordination of speech. The mind is usually clear, but the patient may be in an exhilarated state and may not appreciate the seriousness of his condition. Nausea, vomiting and diarrhœa are occasional symptoms, and a gripping sensation round the throat and respiratory distress have also been observed. In fatal cases weakness and paresis of the musculature of the neck and limbs with dyspnœa and finally failure of respiration may occur. Poisoning may follow the consumption of either raw or cooked mussels. If these are taken as part of a heavy meal absorption may be delayed and the symptoms may be less severe.

The poison responsible for the Californian outbreaks was isolated by Sommer, and its pharmacology has been investigated by Prinzmetal, Sommer and Leake.[7] It is soluble in water and alcohol and insoluble in ether and chloroform. It is heat-stable in acid solutions, but is rapidly destroyed by boiling in the presence of excessive alkali. These workers have shown that the poison is relatively slowly absorbed from the gastro-intestine and fairly rapidly eliminated unaltered by the kidneys. Its main effect is a depressant one upon the respiratory centres; the cardio-inhibitory and vasomotor centres are also depressed, and there is some impairment of conduction in the heart. It is without effect upon the smooth muscle of the intestine and uterus.

Through the courtesy of Dr. Sommer, of the Hooper Foundation, I have been able, during the last year, to make some further analysis of the action of this poison on the nervous system. I have shown that while in large doses it has a primary depressant effect upon the respiratory centres, in moderate and smaller doses its action upon respiration is more complicated. Slowing of the rate of respiration is due to the depressant action on the centres, but this is attended by an increase in the bursts of activity of the centre analogous with that seen in asphyxia and due partly to anoxia induced by the low blood pressure and in part to asphyxia which results from curarization of the motor endings in the respiratory muscles. The poison has an extremely powerful curarizing action, more potent indeed than any sample of curari which I have been able to test, and much more potent than the snake venoms. Curarization of the respiratory muscles occurs very rapidly and must play a large part in causing the fatal respiratory failure which is observed in man.

I have further analysed the action of the poison upon the vascular system. The fall of blood pressure which results from the injection of the poison is due to vaso-dilatation and is wholly of central origin, since no appreciable fall of blood pressure can be demonstrated in the spinal animal nor in the decapitate preparation. The splanchnic region contributes most to the vaso-dilatation, the vascular areas in the musculature playing a smaller part. The buffering mechanism of the circulation, the carotid sinuses and the aortic vagus mechanism may be directly affected by the poison, but the response to an injection seems to be unaffected either by full atropinization or by "unbuffering" the circulation by vagal section and ligation of the common carotids.

In addition to its action upon motor nerve endings, the poison has a powerful paralysant action upon the sensory nerve endings both of the skin and of the muscle spindles. Upon amphibian skin-nerve and nerve-muscle preparations it is active in extremely high dilutions.

Mr. H. le Messurieur is at present engaged in attempting to isolate a similar poison from Australian mussels. It seems probable that the displacement of mussel beds by the intensive culture of oysters on the Pacific coast of Australia has been a fortunate circumstance which has diminished the possibility of any serious outbreak of mussel poisoning.

Prevention of Mussel Poisoning.

The most important prophylactic measure is the effective quarantine of all mussel beds during the summer months, when the mussels may become toxic. Poisoning may be prevented, even when the mussel beds are toxic, by eating only mussels which are cooked in the presence of some sodium bicarbonate to make them somewhat alkaline. The mussel poison is unstable when heated in alkaline solution. Whether mussels collected in this way can be made sufficiently palatable remains to be determined by the test of experience.

Treatment of Mussel Poisoning.

The stomach should be at once emptied by the stomach pump and washed out with sodium bicarbonate solution. Saline cathartics should be administered and, as Leake and his colleagues suggested, removal of the poison should be encouraged by the administration of powerful diuretics. Prolonged artificial ventilation may save life even after respiration has apparently failed. Permewan[8] kept a patient alive for nine hours, though this case was ultimately fatal. The administration of carbogen and of some of the modern analeptics, such as "Coramine", may be of value if depression of the respiratory centre is a dominant feature. Prinzmetal, Sommer and Leake recommend also the exhibition of ephedrine to sustain blood pressure, and the avoidance of digitalis and alcohol, the former because of its depressant effect upon the conduction system in the heart and the latter because its absorption hastens the absorption of the poison and because in large doses it increases the disability of the already paralysed vasomotor system.

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Reviews.

RHEUMATISM.

There has been of recent years an increased interest in the various conditions commonly heaped together under the name rheumatism. The efforts of the British Red Cross Society and the appointment of the British Medical Association Committee to investigate the problem are two signs of this interest. The Committee has published a report, and from a member of the Red Cross Clinic has come a very valuable and comprehensive volume.[1] Some may complain that it is too comprehensive, that such subjects as flat-foot and newgrowths in the spine are beyond the scope of such a work, but the author makes no apology for their inclusion.

The book is divided into two parts, the first dealing with rheumatic conditions in general, the second with affections of particular joints and areas. The author is always mindful of the fact that his book is written for the busy general practitioner, who has no time to keep up his reading in pathology, anatomy and physiology. He therefore introduces his book with a chapter on physiology and biochemistry, while in the second part, dealing with regional affection, there is a detailed anatomical summary with each section, including muscles actuating a joint and their nerve supplies.

The chapter on the general ætiology of acute rheumatism is well done, with a breadth of view and a scepticism of non-proven theories which is most refreshing. The whole section on acute rheumatism is good. Twenty-five detailed pages are given up to all aspects of rheumatism in childhood. The insistence on adequate convalescent care is emphasized, and mention is made of the excellent work being done at the special heart schools in England. This work is now being copied in New South Wales, with a very promising beginning in Mount Arcadia, at Parramatta North (The Medical Journal of Australia, November 24, 1934).

A section is devoted to Still's disease, which the author separates entirely from rheumatoid arthritis, giving his reasons for doing so. "Fibrotic affections" are dealt with in another detailed section, complete with an introductory anatomical study.

Chronic arthritis is discussed under two headings: (*a*) Metastatic arthritis, that is, those forms of arthritis which are caused by an invasion of a joint by organisms or their toxins, derived from a focus of infection. This includes suppurative arthritis, for example, from staphylococcus, pneumococcus, streptococcus or gonococcus, tuberculous arthritis, dysenteric and enteric arthritis, and indeterminate metastatic arthritis. This last includes a very clear and rational discussion of the whole subject of "focal" sepsis, especially a section devoted to dental sepsis, but "every case should be carefully investigated by a competent dental surgeon before any drastic treatment is advised". (*b*) Rheumatoid arthritis, which, the author

[1] "General Practice Series: Rheumatism in General Practice, A Clinical Study", by M. B. Ray, M.D., with foreword by Lord Horder of Ashford, K.C.V.O., M.D., F.R.C.P.; 1934. London: H. K. Lewis and Company, Limited. Demy 8vo., pp. 414, with six plates. Price: 16s. net.

insists, must be separated from metastatic arthritis and considered as a general disease, not simply as a joint condition. He emphasizes, for instance, the important part played by mental stress and exhaustion in causing the disease, and the very secondary importance of septic foci. Treatment is dealt with in considerable detail and includes in addition to ordinary medical and physical measures the use of insulin, hydrochloric acid and blood transfusion.

The chapter on gout and metabolic arthritis, when gout is so much less common than in the past, is possibly of the least practical interest in the book, which is a pity, as it is well written and full of helpful ideas.

The next chapter, on osteoarthritis, contains good accounts of Charcot's joint, syringomyelic arthropathy and articular neuro-mimesis (hysterical joint), as well as a very careful description of what is ordinarily regarded as osteo-arthritis. There is a table of differential diagnosis, with a not very hopeful section on treatment, but most of the treatment is left to the section on regional conditions. There is no mention anywhere of pulmonary osteo-arthropathy.

Fifty closely written pages describe physical methods in the treatment of rheumatic disease, including a classification of English spas, and a few words on Continental spas. This chapter is written with a balance and discrimination based on the author's long experience, and gives rules not generally obtainable, and valuable, even though our opportunities for spa treatment in this country are very limited.

There follow some two hundred pages devoted to regional conditions, which naturally implies some degree of repetition, but on the whole is clear and detailed. As has been said, at times the word "rheumatism" is unduly stretched, while there are one or two curious omissions, for example, forcible breaking down adhesions in the shoulder joint, the manipulation treatment of chronic sacro-iliac disease, or the use of gold or other organic compounds. On the whole the reference to orthopædic measures is weak. The directions are not full enough for a novice and are of little use to an expert. Meantime manipulative measures are being increasingly used in the treatment of chronic disease of the joints, especially those following an old injury.

There is no reference in the sections on vaccine treatment to the work of Warren Crowe or Solis-Kohn, of which much was heard at one time; and the British Red Cross Society Committee seems to have small faith in protein shock, organic gold or sulphur therapy. There is a good index and the bibliography is moderately good. Excellent paper and printing set off a most useful book.

A TOUCH OF HUMOUR.

LIFE is not all drab. We owe M. Lumière a thousand thanks for the grins and chuckles evoked by his latest book, "The Revival of Humoral Medicine".[1] M. Lumière is a prolific author; he has been at it these forty years, and as long ago as 1922 his publishers issued a tome of his called "The Colloidal Theory of Biology and Pathology". This work was a dissertation upon the part played in health and disease by "bodily humours"; it was a re-hash, in other words, of the old Hippocratic doctrine which viewed the body as a living saucepan filled with four sauces: blood, black bile, yellow bile and phlegm. In the "Colloidal Theory" M. Lumière refurbished the ancient beliefs. With immense pains he strove to bring them into line with the proven facts of anatomy, physiology and medicine. The business suggested an architect fussing over the conversion of a decrepit and mouldy building into modern flats. Now this new book seems to be a kind of follow-up to the old one. It is a guide-book of treatment. It lays down methods by which the healer of today, if he do but believe with all his soul in humoral pathology, may cure divers sick folk and succour such as have been "given up", with a shrug of the shoulders, by other doctors. M. Lumière's thesis is that our bodies hold pints of colloid liquors, or "humours". Let these fluids suffer invasion by certain solid bodies—microbes, the products of intoxications, poisons of a thousand sorts—and the undertaker is soon tapping at the door; that is, unless M. Lumière gets there first. Once these noxious things get into our colloids, he says, a process of "flocculation" takes place. And these solid bodies rush up and down between the cellar and the attics, looking for something to flocculate. But M. Lumière is too good for them. Generations of asthmatics yet unborn, people with eczema, bronchitis and even tuberculosis will live to bless him. Why? Because, by means of intravenous injections of magnesium hypo-sulphite and three tablespoons of coffee per day, he can sweeten the colloids and make flocculation nothing but a horrible memory. It may be asked how all this has been received by the medical world. Shameful to relate, M. Lumière's researches have so far been greeted with nothing but sniffs. M. Lumière has piped unto his colleagues, but they do not dance. Take the "*Nouveau Traité de Médecine*" for instance. It is a mammoth work; there are twenty-two volumes of it, written by fifty-two doctors. And it does not contain a paragraph on modern humoral pathology. Consider the "*Pratique Medico-Chirurgicale*", no less a classic in its way. Does it mention the humours? No; not by so much as a semicolon. With all this flocculation going on everywhere, M. Lumière naturally feels a little hipped. Sometimes, when the skies are dull and his old wounds throb, he tells us that he broods on the saying of Montaigne: "A prophet is without honour in his own country"—a fact previously jotted down by three of the evangelists. Yet none must think that M. Lumière's book is without merit. It is well printed; it weighs only fifteen ounces and is therefore portable; and it contains a history of humoral pathology filled with sprightly touches of anecdote. Perhaps the best story is that about Paracelsus, though he could not be described as a really good humorist. Paracelsus thought that our souls were made of mercury and our spirits of sulphur; and he thought, too, that the life force had its headquarters in our stomachs. But always, Paracelsus believed, a deadly poison was lying in ambush, ready to kill us—tartar. "You have tartar on your teeth, haven't you?" Paracelsus used to shout. "And tartar is a poison, isn't it? Right. Well, if there is tartar on your teeth there must be tartar in all your organs, and sooner or later the tartar will get you."

[1] "La Renaissance de la Médecine Humorale", by A. Lumière; 1935. Lyons: Imprimerie Léon Sézanne. Demy 8vo., pp. 215.

ALLERGY.

DR. G. W. BRAY, in the second edition of "Recent Advances in Allergy", rightly refers to the popularity of allergy as a subject of research, for no less than 700 additional references have been added to the new edition of his book. The general arrangement of the volume is similar to that of the first edition. A new chapter on the association of allergic with other diseases is chiefly concerned with tuberculosis in its relation to asthma. The writer summarizes the position by stating that only one asthmatic patient in 100 gives any positive evidence of active tuberculosis and that only one patient in 200 with active tuberculosis suffers from true asthma. Another interesting chapter on nasal allergy (allergic coryza) discusses the diagnosis and treatment of this condition. Sections have also been added on cardio-vascular conditions and genito-urinary disease in their relation to allergy. The various chapters in the book have been revised and several rewritten and brought up to date. In a reference to pyrogenic therapy the writer notes the fact that as a rule patients who may have obtained marked relief during pyrexia accompanying spontaneous infections do not obtain the same relief from subsequent artificial pyrogenic therapy. The book is again an excellent contribution to the literature of allergy and should be in the library of all those interested in the subject.

[1] "Recent Advances in Allergy (Asthma, Hay-Fever, Eczema, Migraine, etc.)", by G. W. Bray, M.D., Ch.M., M.R.C.P., with foreword by A. F. Hurst, M.A., M.D., F.R.C.P.; Second Edition; 1934. London: J. and A. Churchill. Demy 8vo., pp. 518. Price: 15s. net.

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THE ROYAL AUSTRALASIAN COLLEGE OF SURGEONS.

On March 4, 1935, the building of the Royal Australasian College of Surgeons was formally opened in Melbourne by Sir Holburt Waring, Bart., President of the Royal College of Surgeons of England, in the presence of a large gathering of medical graduates from many parts of the world. Every State in the Commonwealth was represented, as was the Dominion of New Zealand; and representatives were present from the United Kingdom, from Canada, from South Africa, and from the United States of America. It was an occasion of great moment in the history of medicine in Australia. Of great moment, not because after so short a period of existence the College had made such progress that it was able to enter its own home and could for that reason claim achievement that few other organizations have equalled after a brief existence, but because it was clear from the obvious sincerity of everyone directly concerned that a definite step was being taken towards the attainment of the aims, the high ideals of its founders. "To cultivate and maintain the highest principles of surgical practice and ethics" is an object that must concern, even if it does not attract, every medical practitioner and ultimately every member of the community.

The objects of the College are many, and at this epoch in its history we may refer to the progress made in regard to one or two of them. Two foundations for research have been established. The Syme Research Scholarship is awarded annually and is provided by part of the interest from a sum of £2,500 donated by the widow and family of the late George Adlington Syme. The Syme Research Scholar for 1934 was G. R. A. Syme; and for 1935 the scholars are L. S. Loewenthal and R. J. W. Malcolm. When the sum bequeathed to the College by the late Robert Gordon Craig becomes available, £20,000 will be at the disposal of the College for research. The College is thus touching merely the fringe of research and is waiting for further endowments. In the matter of research this journal has always held that endowments should be sought. It is little use sitting and waiting until the idea occurs to someone to endow research; there is every justification for active canvass in this direction. Since proverbially nothing succeeds like success, now that a start has been made, some wealthy surgeons might be induced to leave at least a percentage of their wealth to the cause that they profess to have at heart. The Council of the College might think of embarking on a research endowment campaign.

Progress has been made in another direction, that of post-graduate training. An agreement has been made between the College and Prince Henry's Hospital, Melbourne, formerly known as the Homœopathic Hospital. According to this agreement the College will accept the hospital as its school for post-graduate surgical education and will do everything in its power to aid the advancement of the hospital. This is the first step towards the establishment of a post-graduate hospital in Australia. The details of the agreement, which is

published for the first time in the handbook of the College, will not be described on this occasion. It will suffice to state that the College will have a voice in appointments to the honorary surgical staff, that the College will appoint a director of post-graduate studies, and that the College will have to approve the scheme of post-graduate instruction for each year. This matter will be discussed on a future occasion. At present we would plead for a wide outlook in post-graduate surgical training, so that the needs of every type of practitioner in Australia may be met, the general practitioner of the backblocks compelled to undertake all kinds of surgical operations in emergencies, as well as the erudite surgeon of the teaching hospitals and of large industrial centres. The academic dream of Professor F. Wood Jones of the return of the "master surgeon" of olden times, described in his recent brilliant Syme Oration, cannot be fulfilled in Australia. Much as we might wish it, Australia will never be such a surgical Utopia.

So far we have dwelt on what the Royal Australasian College of Surgeons has done and is doing. There is one direction in which its future activities should not extend. In his speech at the opening of the College building, Sir Holburt Waring said that he supposed that in time to come governments would approach the College in regard to certain questions of public importance. This would not be advisable. If the medical profession speaks to governments, it should speak with one voice, and the only body qualified to do this is the British Medical Association. At the last meeting of the Federal Council of the British Medical Association in Australia the suggestion was made that bodies that did not come within the ambit of the Association should restrict their activities to scientific matters. In referring to this subject we do not wish to imply that the Royal Australasian College of Surgeons would willingly do anything to jeopardize either the influence that the medical profession may have with, or the esteem in which its members are held by, governments. In dealing with governments, as in every other collective activity, union is strength; and the College will surely recognize this fact.

Current Comment.

AGRANULOCYTOSIS CAUSED BY AMIDOPYRINE.

Agranulocytosis occasionally occurs in the course of diphtheria, but in 1922 Schultz described a form of necrotic angina mistaken for diphtheria. In this condition there is relative and absolute granulocytic leucopenia. It has been termed agranulocytic angina. Diligent but vain search has been made for a causative organism, and the term "sepsis with granulocytopenia" was suggested. There have also been described cases of aplastic anæmia with reduction of granular cells in the blood, attended by glandular and splenic enlargement, but without hæmorrhagic tendency. "Pyramidon", which is a compound of phenazone ("Antipyrine") has been in use for many years as an analgesic and antipyretic. Under the name of amidopyrine it was included in the 1932 British Pharmacopœia. It is largely used in conjunction with barbiturates, but also with other preparations whose names do not indicate the fact that amidopyrine is a component. It is certain that agranulocytic angina has increased with the more prevalent use of amidopyrine. This was discussed in these pages on July 21, 1934. It is doubtful whether the barbiturates by themselves can produce agranulocytosis, but they may act as powerful adjuvants to amidopyrine. Although phenazone is a close chemical ally, its toxicology is totally different and it would seem rarely or never to produce agranulocytosis.

P. Plum has given an exhaustive account of agranulocytosis due to amidopyrine. He relates that since May, 1933, 128 cases have been reported with 70 fatalities.[1] That such occurrences were causally related can be established only by demonstrating that amidopyrine, in therapeutic doses, produces granulocytopenia in patients whose blood picture is normal. Such proof has been given.

Plum gives seven case records in detail, six being fatal. The signs and symptoms included "chills", pyrexia, tachycardia, dyspnœa and cyanosis, stomatitis and sore throat, with dry tongue and fœtid breath, exudate on or ulceration of the tonsils, superficial necrosis of the cheek, dysphagia and enlargement of the angular glands. Jaundice was sometimes present, but no purpuric spots. There was only slight diminution of the red cell count, the hæmoglobin value falling to 90%. The platelets were of normal appearance; one count showed 120,000. Lymphocytes and monocytes were normal in appearance. The white cell count fell conspicuously, being as low as 120. Granulocytes were generally entirely absent. Autopsy findings were extensive degeneration of the marrow of the femur with absence of granulocytes. The lungs, liver and spleen showed almost total absence of polymorphonuclear cells.

In the reported cases 75% of patients were females and 25% males. Most of the females were

[1] *The Lancet*, January 5, 1935.

in the age group 40 to 49, and the males 60 to 69; but no adult age is exempt. It has been suggested that disturbances of the endocrine glands may play a part in the development of this disorder, and the difference in age incidence in the sexes may be thus explained. Hormonal conditions may have a dominating part. In a female granulocytopenia corresponded to the first day of each menstrual epoch. In a male there was a rise of the granulocytic count after thyreoid administration. It is unlikely that intolerance can be certainly established by blood examination after one dose. Possibly an allergic condition may develop later. We do not know whether some individuals are permanently hypersensitive or are only so at certain times. Kracke and Parker, as stated in our previous reference to this subject, presuppose the existence of a previously weakened, damaged or idiosyncratic bone marrow. Patients may suddenly manifest agranulocytosis after amidopyrine, although they have had such drug previously without subjective discomfort. Cutaneous tests have given no reaction and amidopyrine may cause a rash without change in the blood picture.

Combined hæmotoxicoses, including leucopenia, thrombopenia and anæmia, have been described after the administration of arsenobenzol, gold preparations and benzol. Pure agranulocytosis has followed arsenobenzol alone or with bismuth or mercury; or gold or dinitrophenol. The few cases ascribed to phenazone are doubtful. Plum concludes that, in view of the extensive use of amidopyrine, comparatively few persons are hypersensitive to it, as is the case with neosalvarsan, "Atophan" and "Sanocrysin"; but he has no doubt that deaths due to amidopyrine are commoner than those resulting from any other drug, apart from suicide or accidental overdosage. In these circumstances there would seem to be no reason for retaining this preparation in the pharmacopœias. Its benefits can be obtained by more innocent compounds.

TRACHOMA.

Interest in trachoma seems to have flagged; possibly because, in more advanced communities, the incidence and severity of the disease have waned. But trachoma is still prevalent in many places and is a menace wherever it occurs. The elusive solution of its ætiology and epidemiology must be relentlessly sought. It is in countries such as Egypt and India, where trachoma is common, that the solution is most likely to be found. Some of P. Shannon's observations in Baluchistan are interesting and enlightening.[1] He found in the army at Quetta that the incidence of diseases of the lids, conjunctiva and cornea among Indian troops was very much higher than among British troops; he concludes, therefore, that the problem is one that concerns the indigenous population only. The incidence of trachoma is highest among the Sikhs. These people differ little in their habits from the Mohammedans; but, as they never cut their hair, it is possible that they do not wash their heads as regularly. Shannon points out, on the other hand, that they practise communal religious bathing in sacred tanks at their temples; he believes that this is the most important factor in the prevalence of the disease among them. The Sikhs are robust people with no predisposition to deficiency diseases; their diet is mixed and nutritious and rich in vitamins. The southern Indians, on the other hand, have a diet consisting mainly of rice, and they are liable to such deficiency diseases as beri-beri and keratomalacia; but trachoma is a rare disease among them. Shannon suggests that this is sufficient evidence to refute the theory that trachoma is a deficiency disease.

Shannon points out that all countries in which trachoma is endemic are agricultural countries, and the disease attacks mainly those who work on the land. He suggests that the trachoma virus infects persons coming in contact with the soil or its products, the infection spreading further in unhygienic home surroundings. In support of this he mentions: (i) The incidence of trachoma in a cavalry unit was twice the incidence among infantrymen of the same community; (ii) there is a lower incidence among town-bred Sikh children than among those reared in Punjab villages, although the surroundings are no less dusty and dirty; (iii) the squalor and poverty in which trachoma flourishes in some countries cannot equal the conditions in the slums of some European industrial towns, where the incidence of trachoma is low.

Another interesting observation is that newly recruited Gurkhas are almost invariably free of trachoma, whereas among Gurkhas who have served five to ten years the incidence is 8·7%. During the summer months Gurkha families are liable to epidemic Koch-Weeks conjunctivitis. Examination after the subsidence of the acute inflammation frequently reveals evidence of early trachoma. Shannon believes that these epidemics are responsible for the spread of trachoma among the Gurkha families and from them to the soldiers. In India trachoma does not disqualify a recruit for joining the army; but the disease is unlikely to spread to healthy troops because it is healed or almost healed by the time the age of enlistment is reached; the rigid caste system is maintained in the army as elsewhere; hygienic conditions in the army are better than in the villages.

Shannon mentions the value of Saliberry's sodium chloride massage in treatment. This measure can be readily carried out by medical practitioners not specially trained in ophthalmology; it is safe and rapidly effective. He believes that if it were used freely in Indian bazaars and villages, instead of the multifarious methods at present in vogue, great progress could be made.

The paper is valuable and provocative and should be read by all interested in either ophthalmology or public health work.

[1] *The Indian Medical Gazette*, December, 1934.

Abstracts from Current Medical Literature.

THERAPEUTICS.

Streptococcus Vaccine in Chronic Rheumatoid Arthritis.

CHARLES W. WAINWRIGHT (*The Journal of the American Medical Association*, November 3, 1934) gives the results of his attempts to treat patients suffering from chronic rheumatoid arthritis with a vaccine prepared from a strain of streptococcus to which such patients have been shown to be skin-sensitive. The fact that the streptococcus has an ætiological bearing in chronic arthritis will not be denied, but the exact relationship is far from definite. Most workers have failed to isolate such an organism from the blood or the affected joints in any large proportion of cases. However, Cecil, Nicholl and Stainsby in 1929 reported that they had isolated a hæmolytic streptococcus from the blood stream and joints of over two-thirds of their patients with chronic rheumatoid arthritis and, moreover, were able to reproduce a similar arthritis in rabbits by inoculating them with this organism. This work has been confirmed by some and denied by others. More important is the fact that the presence of serum agglutinins for hæmolytic streptococci in a very large proportion of cases of chronic rheumatoid arthritis has been reported by numerous observers. In this instance the author found forty-six, or 90%, of his series of fifty-one patients to possess agglutinins in their serum. In order to determine the strain of streptococcus to which his patients with rheumatoid arthritis showed the maximal skin reaction, intradermal tests were made in fifty-five cases. The information thus obtained was to be a guide in vaccine therapy. The antigens used were both hæmolytic and green streptococci obtained from foci of infection in arthritic patients. No tests were made with autogenous strains. Details of preparation are given and also the dosage administered in each instance. All patients reacted intradermally to one or more strains, 90% reacting to the hæmolytic variety. The next problem was to determine the changes that would occur in the diseased joints concomitantly with a gradual reduction of skin sensitiveness following the repeated injection of the antigen to which the patient was particularly sensitive. The intravenous method of administration was used. During the first period of treatment the patients were kept in hospital, in most instances in bed. No other treatment was employed apart from sedatives and salicylate of soda. Vaccine was administered at four-day intervals for four to eight weeks, after which time the injections were given at weekly intervals. Under treatment, twenty-one, or 75%, of the twenty-eight patients under observation, have shown evidence of definite improvement as manifested by reduction of pain, reduction of soft tissue swelling and increased mobility of the joint. Although constitutional reactions have been absent, the patients have uniformly complained of focal reactions for twenty-four hours after the injection. Following this the joints have been less painful. During the course of treatment the skin reaction to the strain employed has uniformly diminished in intensity and frequently disappeared entirely, and the agglutinating power of the patient's serum has been greatly increased.

Dosage above the Pharmacopœial Maximum.

THE doses given in the Pharmacopœia are merely guides to the prescriber and are not binding on any medical practitioner who, by experience, finds that the best results are obtained from doses in excess of those mentioned. Arthur F. Hurst (*The Lancet*, December 22, 1934) deals with a few examples and points out how recent work has emphasized the need for dosage according to experience. With regard to iron, it is surprising to find how little care is often taken in deciding whether a condition is one for iron or liver therapy, proprietary preparations being very popular in which the two are combined. The dosage of iron is generally quite insufficient, complicated organic preparations are too often ordered instead of the simple inorganic preparations, which are also the most effective, and iron injections have not yet passed into the oblivion they deserve. In the last thirty years the dose of iron and ammonium citrate has been gradually increased from 0·3 gramme (five grains) to 2·0 grammes (thirty grains) three times a day. This latter dosage has the effect of increasing the hæmoglobin by about 1% per day. A greater dosage may be dangerous. Four cubic centimetres (one drachm) of dilute hydrochloric acid in 150 cubic centimetres (five ounces) of water make a solution which is only slightly weaker than natural gastric juice and, flavoured with the juice and pulp of an orange, make a pleasant beverage which should be taken before breakfast and with luncheon and dinner by patients suffering from achlorhydria. In a case of Addisonian anæmia, which is almost invariably associated with an incurable achlorhydria, administration of four cubic centimetres (one drachm) of dilute hydrochloric acid sipped during the hour following a test meal were rarely sufficient to neutralize the alkaline contents of the stomach, so that no free acid appeared. In spite of the alkalinity of bile, large doses of hexamine act as a biliary antiseptic. Formerly the maximum dose of hexamine which could be given with safety was limited by the supposed necessity of keeping the urine acid. But hexamine is just as efficient a biliary antiseptic when sufficient alkali is given to keep the urine permanently alkaline; under such conditions no formalin is set free, and enormous doses can be administered without causing any bladder irritation. The value of atropine sulphate in the treatment of peptic ulcer lies in the fact that its influence in inhibiting the gastric secretion is approximately parallel to its effect on the salivary secretion. In some cases of *paralysis agitans* it has been found possible to give as much as 0·008 gramme (one-eighth of a grain) of hyoscine hydrobromide three or four times a day without any troublesome dryness of the mouth or paralysis of accommodation, provided it was combined with pilocarpine. Stramonium is more effective than hyoscine in post-encephalitic disorders, and experience has shown that the combination with pilocarpine nitrate enables a larger dose of stramonium to be given, with corresponding better results. For incurable pain of inoperable cancer the fearless use of morphine is strongly recommended. The various substitutes do not seem to possess any particular advantage. The dose required in some instances may be huge. The chief disadvantage is that death is often delayed, though this means much more to the unhappy relatives than to the sleeping patient.

Intravenous Administration of Carbon.

A. TOURAINE AND B. MENETREL (*La Presse Médicale*, December 12, 1934) describe a treatment of various infections by intravenous injections of carbon. Animal charcoal sometimes caused severe toxic symptoms. The authors used a vegetable charcoal in 2% solution in serum. *Lupus erythematosus*, bullous impetigo, erysipelas, furunculosis, septicæmia, including puerperal sepsis, are said to have been successfully treated by this method. As many as fifteen injections have been given intravenously without ill-effect. *Post mortem* examinations have shown that the carbon was widely distributed in all the organs of the body. Animal charcoal caused a polymorphonuclear leucocytosis, but the reason for the action of vegetable charcoal was uncertain.

The Effect of Vitamin A on the Common Cold.

GERALD S. SHIBLEY AND TOM D. SPIES (*The Journal of the American Medical Association*, December 29, 1934) report the results of a study to determine whether or not the addition of vitamin *A* to the diet has any effect on the prevention, duration and severity of the common cold. A group of 241 adult volunteers was investigated by giving 76 of these vitamin *A* in the form of halibut liver oil. To half of the remainder the "Viosterol" equivalent of the halibut liver oil was administered, and to the other half plain maize oil was given. The duration of the experiment was fifty-six

weeks. For the purposes of this study the common cold included mild to moderately severe infections of the upper respiratory tract, characterized by definite coryza, rhinitis and nasopharyngitis. The results in regard to incidence indicated clearly that supplemental feeding of vitamin *A* in no way reduces the number of colds. The administration of halibut liver oil failed to influence significantly the relative severity of colds. With respect to duration, the experimental data were less easy to interpret. The general conclusion was, however, that vitamin *A* seemed to shorten colds slightly in the winter months.

NEUROLOGY AND PSYCHIATRY.

Juvenile General Paralysis.

WILLIAM C. MENNINGER (*American Journal of Syphilis and Neurology*, October, 1934) reports on a statistical study of 43 cases of juvenile paretic neuro-syphilis personally observed and 610 cases collected from the literature. Juvenile paresis represents less than 2% of all cases of general paresis. The author estimates that less than 10% of congenital syphilis develops later into neuro-syphilis. It would appear that the percentage of congenital syphilitics who develop juvenile paresis is smaller than the percentage of adults with acquired syphilis who develop general paresis. In juvenile types the ratio of males to females is as 1·36 to 1. The average age of onset in males is 13 years, and in females 12·9 years. An onset before the sixth year occurred in 9·4% of cases. Patients showing involvement of the central nervous system from birth may be regarded as suffering from infantile general paralysis. An onset after the twentieth year occurred in 3·6% of cases, five cases occurring after the age of twenty-five. Cases of supposed juvenile general paresis are reported in the literature as occurring as late as the fortieth year, but Menninger considers that it can never be positively proved that in such congenital cases with extremely long latency periods an infection has not been superimposed on an old burnt-out congenital syphilitic basis.

The Psycho-Pharmacology of "Sodium Amytal".

MELVIN WILFRED THORNER (*The Journal of Nervous and Mental Disease*, February, 1935) discusses the effects of "Sodium amytal" administered to mental patients. All types of patients were treated, but the greatest number were chosen from the group of biogenetic psychoses. The number of patients suffering from paresis and paranoia was too small to yield results of any statistical significance. Definite changes occurred in the catatonic group. The writer never found it necessary to give more than 0·45 gramme (seven and a half grains) intravenously. He found it a useful practice to give 0·36 to 0·54 gramme (six to nine grains) orally immediately preceding the injection. A four to five minute injection was found to produce the best results. Patients exhibiting mutism, *flexibilitas cerea*, and refusal of food were favourably influenced by the treatment, but the beneficial effects were only of temporary duration. In nearly all cases there was better rapport with the physician and more interest was shown in the environment. Some patients appeared to gain more insight into their condition. Hebephrenic patients generally appeared to be less dominated by their delusions. Although certain patients of the manic-depressive group were rendered respectively more depressed or excited, the author believes that in the greater number of cases the duration of the excited or depressed phase of this illness was shortened by the use of "Sodium amytal". The author believes that the action of this drug is largely that of an anti-inhibitory agent, although he admits that there are probably other actions on the nervous system.

Psychological Factors in Diabetes.

WILLIAM C. MENNINGER (*The Journal of Nervous and Mental Disease*, January, 1935) reports upon twenty-two cases of mental disorder associated with diabetes. He reviews extensively the literature on psychogenic glycosuria and notes the psychic factors which may play an ætiological rôle in the development of *diabetes mellitus*. His patients fall into three groups: those in whom the diabetes and mental disorder apparently developed together, those in whom the diabetes developed in the course of the mental disorder, and those in whom the diabetic condition was known and established before the onset of the mental symptoms. More than half the number of the patients studied in this series showed paranoid delusions as an outstanding mental symptom. None of the author's patients was considered fit for psychoanalysis; but the mental disorder is presumed to have arisen from psychogenic causes. The close parallelism between the metabolic disturbance and the mental disorder suggests in this series of cases that the former may be a result of the same emotional conflicts which produced the latter. In the light of this investigation, the writer claims that, independent of future advance in anatomy, biochemistry and physiology, psychology will remain essential to the complete understanding of the diabetic state.

Prolonged Narcosis in Mental Disorder.

ROLF STROM-OLSEN AND MURIEL L. M. MCCOWAN (*The Journal of Mental Science*, October, 1934) obtained prolonged narcosis in their patient by the use of "Somnifaine". They discuss at length the history of this therapeutic procedure on the Continent and in the United States of America, referring also to the biological and biochemical hypotheses adduced to explain the results obtained. The technique which these authors use at the Cardiff City Mental Hospital is described. The drug is administered intramuscularly in two cubic centimetre doses as occasion arises. An average dose of six cubic centimetres administered in the twenty-four hours produced practically continuous sleep. In a large percentage of their patients insulin and glucose were administered throughout the treatment, which lasted about fourteen days. Two patients died as the result of cardiac failure due to "Somnifaine" intoxication. Improvement was reported in the mental state of a large number of patients treated. Of the patients treated in this series, 49 suffered from schizophrenia, 45 from manic-depressive psychoses, including involutional melancholia, and 13 were psychoneurotic. The catatonic patients were disappointing; some appeared to recover, but relapsed again shortly after the cessation of treatment. Of the remaining schizophrenics, 8·1% recovered, 38·7% improved, and 53·2% remained uninfluenced by treatment. Results were better in the manic-depressive group: 37·7% recovered, 29% improved, and 33% were unaffected. Manic patients responded better than those in the depressed phase. Of the psychoneurotics, 61·5% recovered, the majority of these having anxiety states. The authors are convinced of the value of prolonged narcosis in the treatment of mental disorders, and plead for an extended trial of this form of therapy.

Cerebro-Spinal Fluid in Mental Deficiency.

K. C. L. PADDLE (*The Journal of Mental Science*, October, 1934) publishes the results of his investigation of the cerebro-spinal fluid of 2,000 cases of congenital mental deficiency—the entire population of the Caterham Mental Hospital. This observer also studied the effects of lumbar puncture upon the patients, 17% of whom developed post-lumbar sequelæ. He claims that there is a direct relationship between the rate of flow of the cerebro-spinal fluid and the incidence of post-lumbar puncture symptoms, these being greater when the rate of the fluid flow was higher. Of the 2,000 specimens of fluid examined, only 2·7% were abnormal. The Wassermann test gave a positive reaction in 19 cases, pleocytosis existed in 32 cases, excess of globulin was demonstrated in 44 cases, and a positive colloidal gold curve was found in 30 cases. Out of 54 cases of mongolian idiocy only one gave a positive Lange curve. This conflicts with the work of Riddell and Stewart, who found pathological changes in the gold curve in the majority of their cases. In the present series abnormal fluid was found to be chiefly associated with cases complicated by epilepsy and paralysis. Only 23·9% of congenital syphilitics had abnormal cerebro-spinal fluid.

British Medical Association News.

SCIENTIFIC.

A meeting of the New South Wales Branch of the British Medical Association was held at the Renwick Hospital for Infants, Sydney, on November 15, 1934. The meeting took the form of a series of demonstrations by members of the honorary staff. Part of this report appeared in the issue of March 16, 1935.

Mild Hypothyreoidism.

Dr. W. C. Petherbridge showed a male child who had been admitted on July 27, 1934, with a history that he had been subject to screaming attacks, had not gained weight, had a poor appetite, and suffered from constipation.

The complexion was sallow, and the skin slightly coarse and dry. Thyreoid extract was given in a dose of 0·03 gramme (half a grain) a day. As a result the complexion and skin improved, and the child gained weight at a normal rate; the constipation was less and the appetite improved.

Dr. Petherbridge remarked that considerations for the future would be the duration and amount of thyreoid administration.

Hydrocephalus.

Dr. Petherbridge's next patient was a boy who had first been seen on June 2, 1933, at the age of six and a half months. During the previous three months the mother had noticed that the child's head was abnormally large. There was no reaction to the Wassermann or the von Pirquet test. At the first examination the circumference of the head was 47·2 centimetres (18½ inches), as compared with the normal 42·5 centimetres. At the time of the meeting the circumference of the head was 55·0 centimetres (22 inches).

Treatment consisted in attention to hygiene, care and feeding under home conditions, and the administration of "Diuretin". The physical and mental development proceeded normally; teething disturbances and colds both reduced the rate of increase in the size of the head.

Dr. Petherbridge also showed a male child whom he had first observed on July 9, 1931. The mother had suffered from albuminuria and œdema during the last month of pregnancy. There had been much head moulding and bruising and the child had been marked by instruments during the birth. The mother had noticed that the head was big at eight months; others had noticed the abnormality at four months. On July 9, 1931, the circumference of the head was 50·0 centimetres (twenty inches), as compared with the normal of 17 inches for the age. There was no reaction to the Wassermann or the von Pirquet test. X ray examination revealed hydrocephalus, with positive pressure; the fontanelles were large and the sutures were abnormally open. Theobromine and sodium salicylate were given in a dose of 0·06 gramme (one grain) to 0·3 gramme (five grains) three times a day. Thyreoid extract was given without benefit. *Hydrargyrum cum creta*, in a dose of 0·01 to 0·03 gramme (one-sixth to one-half grain), was given three times a day. Attention to hygiene and feeding was carried out at home, and good nutrition was maintained. At the time of the meeting the increase in the size of the head was becoming less rapid; it was retarded when the child suffered from teething and diarrhœa or feverish colds. The mental development was satisfactory, but the physical development was retarded. The weight of the head prevented the child's rising from a recumbent position. He was able to stand; but his legs were weak.

Dr. Petherbridge asked for any suggestions concerning prognosis and treatment in these two cases.

Acute Mastoiditis.

Dr. Milton Coutts showed a male patient who had been admitted to hospital on October 4, 1934, suffering from a swelling behind the ear of one day's duration. The patient had been irritable for one week and had had a cough for three or four weeks. The temperature at the time of admission was 38·4° C. (101·2° F.), the pulse rate 144 and the respiration rate 40 per minute. The child was well nourished. The tonsils were large and congested; the tympanic membranes were red and bulging; the left pinna was lifted forward, and behind it was a semi-fluctuant, œdematous tumour. Operation was performed on the night after admission. The thick, œdematous soft tissues were seen to rest on periosteum elevated by pus; the minute bony perforations extended high up in relation to the ear. Radical mastoidectomy was performed and the wound was packed with bismuth-iodoform-paraffin paste and gauze and closed with interrupted silk sutures. Paracentesis of the left drum was performed, and a single dry strip of gauze was placed in the canal. For three days after operation the wound was dressed every two or three hours with methylated spirit and a dry dressing. On the fourth day a little of the gauze packing was removed; a little more was removed each day. The sutures were removed on the tenth day. The lower end of the wound was kept open by probing for several days. The wound healed twenty-four days after operation.

Dr. Coutts remarked that this case illustrated acute mastoiditis with subperiosteal abscess without obvious *otitis media* and with an intact tympanic membrane.

(To be continued.)

ANNUAL MEETING, MELBOURNE, SEPTEMBER, 1935.

The attention of all members of the Australian Branches is directed to the following communication received from Dr. J. P. Major, Honorary Local General Secretary of the Annual Meeting of the British Medical Association to be held in Melbourne in September next.

Members of the Association will readily understand that the elaboration of the programme for the one hundred and third annual meeting in Melbourne during the week beginning Monday, September 9, 1935, involves a very great deal of work and careful planning.

The essential features of the official and scientific aspects of the programme have been arranged and are now subject to the formal approval of the Council in London before publication.

The planning of social functions, entertainments and excursions for members and accompanying ladies is also well in hand, but it will be of enormous help to me and the subcommittees concerned in these activities if we know the numbers to be catered for. With my colleagues, I am very desirous that all attending the meeting shall have an opportunity of participating in one way or another in these entertainments and excursions, but this can only be achieved by having prior knowledge of their numbers. Once the details of these excursions *et cetera* are in the hands of the printers, together with the rest of the programme of the meeting for assembly in book form, it will not be easy to arrange extra tours for any unexpected influx of visitors. It is desired that the matter to be printed in this book shall be available not later than June 1.

The first lists received from London contain the names of about 240 medical men and accompanying ladies, and these are being added to each week, but I have no knowledge of those who will be attending the meeting from the Australian States and New Zealand. Therefore I would ask all members of the Australian Branches who propose to attend to inform me of their intention at as early a date as possible.

If in addition any member desires information regarding hotel accommodation or a room to be booked provisionally or definitely, a slip containing name, address and accommodation requirements attached to the notification, sent to me, will be referred to Dr. Ewen Downie, Honorary Secretary of the Hotels and Lodgings Subcommittee, who will attend to the matter and arrange required accommodation, subject to formal ratification in writing by the member at a later date.

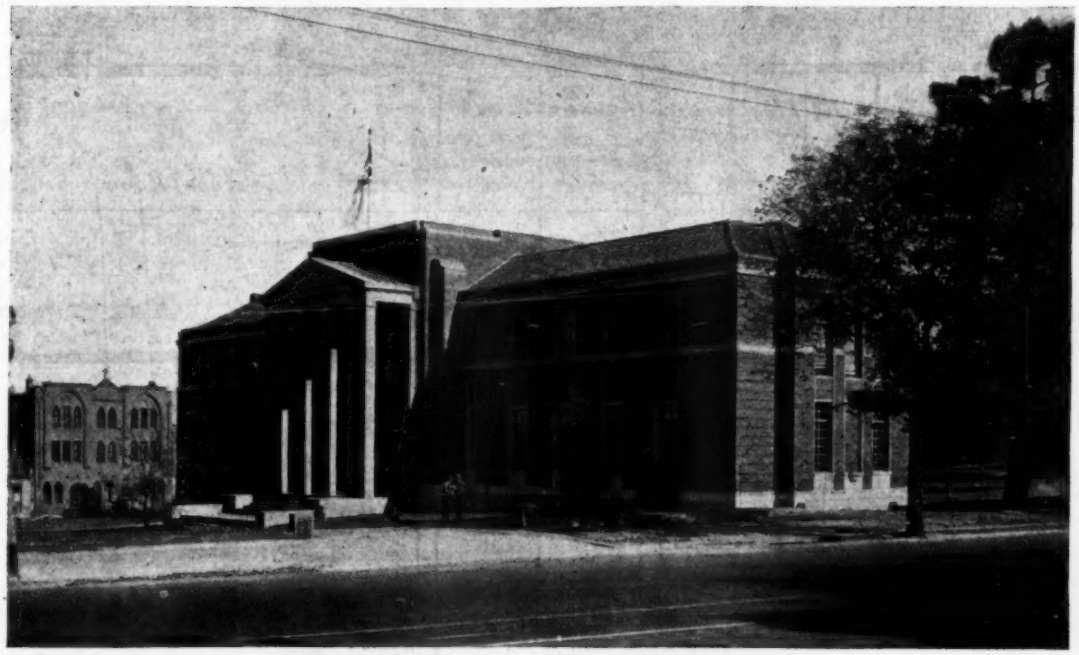
The Royal Australasian College of Surgeons.

OPENING OF THE COLLEGE BUILDING.

On Monday, March 4, 1935, the building of the Royal Australasian College of Surgeons, erected on a site in Melbourne provided by the Government of Victoria, was formally opened by Sir Holburt Waring, Bart., President of the Royal College of Surgeons of England.

The members of the Council of the College with overseas visitors assembled on the steps of the building; the Fellows with their friends were gathered on the lawns in front of the steps. Academic dress was worn.

The President of the College, Sir Henry Newland, asked Sir Holburt Waring to open the doors of the building, and the architect, Mr. Leighton Irwin, presented Sir Holburt Waring with a gold key, with which he unlocked the main doors. When those present had gathered in the lecture hall, Sir Henry Newland called on Sir Holburt Waring, who formally declared the building open.



The New Building of the Royal Australasian College of Surgeons.

Sir Holburt Waring read the following message that had been sent from Sandringham by His Majesty the King:

> It has given me much satisfaction to receive the loyal communication addressed to me by the Council and Fellows of the Royal Australasian College of Surgeons on the occasion of the opening of the new College building in Melbourne, and I would ask you to convey to them an expression of my cordial thanks. Recognizing as I do the benefits to be derived from cooperation between the Mother Country and the Dominions in the wide field of surgery, I am happy to think that this important ceremony is being performed today by the President of the Royal College of Surgeons in England, and I send my sincere good wishes for the welfare and prosperity of the College.
>
> George, R.I.

Sir Holburt Waring then delivered a greeting from the Council of the Royal College of Surgeons of England. He congratulated the Royal Australasian College of Surgeons, and particularly its originators and founders, on the short time that had elapsed between the founding of the College and the opening of its building. Sir Holburt Waring thought that the constitution of the College had been wisely drawn; it gave the College considerable powers for the future. He thought that an organization unfettered by ancient charters would find progress comparatively easy. He congratulated the College on the method adopted for the election of its Fellows, although he admitted that the method was something of an experiment. It was wise to insist on the possession of a senior surgical qualification, for surgery was a science. Surgery was also an art that could be acquired only by experience under the supervision of a master, and the College had recognized this. Sir Holburt Waring had great hopes for the future of the Royal Australasian College of Surgeons. It would, he felt sure, raise the practice of surgery to higher levels. He also foresaw that in the future governments contemplating legislation would approach the College for advice on medical problems. He went on to say that it was impossible to separate advances in surgery from advances in biology; the College would therefore become a centre for the study of surgical and biological science. Research, of course, was essential; and this would not be forgotten by the College. In conclusion, Sir Holburt Waring referred to the necessity for a complete medical library and to the provision of post-graduate facilities that had been made by the agreement between the College and the authorities of Prince Henry's Hospital. He hoped that the College would continue to advance and to flourish.

Sir Henry Newland acknowledged the message from the Royal College of Surgeons of England. He said that this was the first occasion on which the President of the English College had crossed the seas in the performance of his duties. The future of the Royal Australasian College of Surgeons would depend, not on bricks and mortar, but on the spirit that animated its Fellows.

Sir Henry Newland then thanked the Premier and his predecessor in office for having provided the magnificent site on which the College was built.

Sir Stanley Argyle, Premier of Victoria, said that the site had first been made available to the College by the previous Premier, Mr. E. J. Hogan. It had been reserved eighty-three years ago for educational purposes. He was gratified that the College had chosen Melbourne as its headquarters; and it was not surprising that the Hogan Ministry and his own had granted the site to the College. He announced that as a result of legislation recently passed and of an agreement between the Government and the City Council the upkeep of the gardens surrounding the College had been secured in perpetuity. He had been asked to give the gardens a name, and said that he had much pleasure in naming them the "College Gardens".

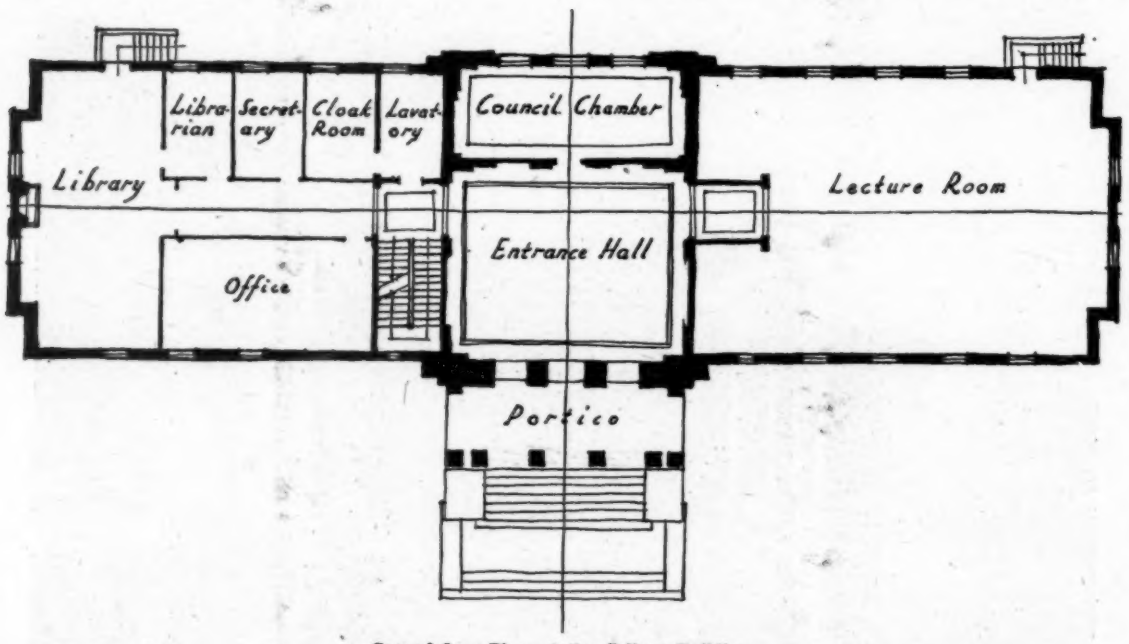
Sir D'Arcy Power then gave an address on how surgery came to Australasia. He pointed out that in 1856 a leading article appeared in the *Australian Medical Journal*, in which the Royal Australasian College of Surgeons was envisaged. This was before the opening of the medical school in the University of Melbourne. He referred to the medical societies of the early days, first of all to the Port Phillip Medical Association, and then to the Victoria Medical Association, and to the Medical Chirurgical Society of Victoria. These three bodies in 1853 united to form the Medical Society of Victoria.

Sir D'Arcy then mentioned some of the early surgeons and gave a brief outline of their activities. The first Fellow of the Royal College of Surgeons of England to settle in Australia was Samuel Pickard Bedford. Then came David John Thomas, a Welshman, and three Englishmen, Edward Barker, Tharp Mountain Girdlestone and James Thomas Rudall. These, with Samuel Athanasius Cusack, performed the major surgical operations in Victoria in those days. Sir D'Arcy Power mentioned Paul Howard MacGillivray, Arthur Martin A'Beckett, Charles Nathan and many others. He described the type of surgical operation that they undertook and said that the operations were representative for the most part of operations that were not unusual in London, in Edinburgh or in Dublin. He described the treatment of aneurysm as these men knew it, and the joy and pride with which they performed lithotomy. A strangulated hernia in those days was punctured with a trocar and cannula before an incision was made in the sac. Intussusception nearly always ended in death. Appendicitis was not uncommon and, according to a report quoted from the *Melbourne Medical Journal* for 1865, Victoria narrowly escaped the credit of having the first surgeon who operated deliberately for its relief. Sir D'Arcy Power gave long extracts of the graphic histories showing how the patients were treated.

Sir D'Arcy Power then described the introduction of Listerism to Australia; he gave details of operations performed by the new method. Then he referred briefly to the history of the Melbourne Hospital, to the difficulties under which the early surgeons laboured, and to the way in which the hospital retarded rather than accelerated the progress of surgery. In conclusion he stated that graduates from Australia who went to the Old Country for post-graduate study were always welcomed. He hoped that the success of the Royal Australasian College of Surgeons would not lessen the number of graduates going to England.

Description of the Building.

The following short account of the headquarters building of the Royal Australasian College of Surgeons has been kindly supplied by Mr. Leighton Irwin, F.R.I.B.A., of Messrs. Irwin and Stevenson, architects of the building.



Ground-floor Plan of the College Building.

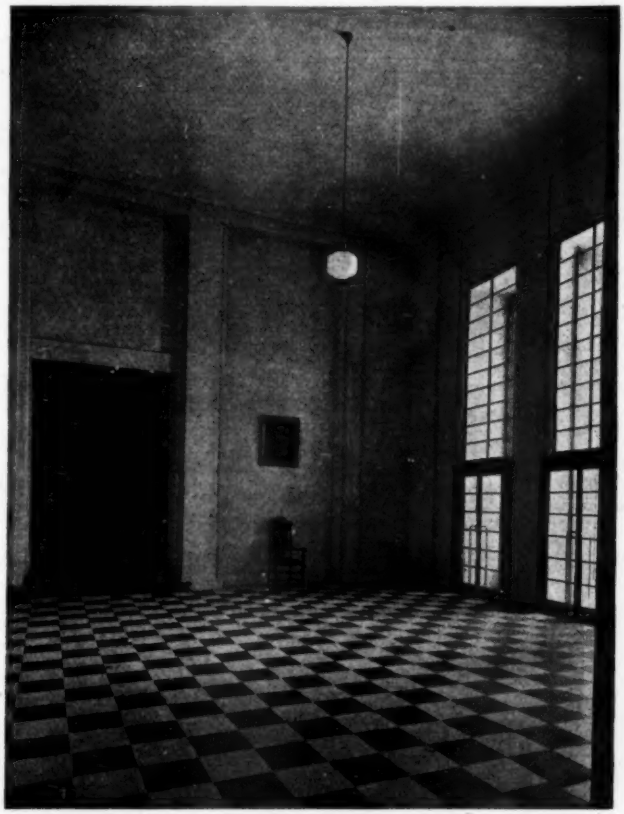
(Kindly supplied by Mr. Leighton Irwin.)

During the time in which the Model School or, as it was at that time, the Melbourne High School for Girls, was fast disintegrating and becoming a menace to the pupils who received instruction in it, the Royal Australasian College of Surgeons, whose activities were cramped by their small office building at the east end of Collins Street, found it necessary to expand.

In conjunction with their architects, Messrs. Irwin and Stevenson, the Council considered their probable activities and the functions that their building would have to serve, and having carefully analysed these, a list of accommodation was prepared and to this the architects worked. A general office, a library and two lecture rooms were briefly the accommodation required, so arranged that it could be extended in two stages. That was the problem—to plan a building which could be added to with the minimum amount of alteration—and in practice it was found that it was necessary to plan three buildings, the one growing out of the preceding. The building as it stands at present,

though complete in itself, will not attain the true projected proportions, particularly internally, till it is completed.

Innumerable sketches, elevations and perspectives from all angles, and several scale models were prepared so that the mass of the building could be carefully studied. Almost a year was devoted to the careful development of the project, every attempt being made to design a building which would be fresh and modern in spirit yet which would not break with tradition. Externally, and this building must be judged from the exterior, the materials used are brick relieved with stone and cement rendering. The Eureka Tile Company, who supplied the bricks, experimented with the architects to the end that a beautiful new colour was evolved. The bricks are two and a half inch tapestries, and the main colour is a rich dark brown. The main interest of the façade is in the portico, with its flight of black steps. The pediment is carved with the coat of arms and the motto of the College, and is supported by lofty square columns of Sydney sandstone. Over each entrance door is a plaque symbolical of various branches of the Royal College of Surgeons. Over the left-hand door a black swan represents the Australian branch; the centre, the lion of Great Britain, the Parent Body; and the right, the galleon representing the New Zealand branch. These pieces of ornament are burnt in full colour in terra-cotta. The tall entrance doors are bronze and plate glass, and emphasize the verticality and dignity of the portico. Spaced at points of importance round the building are four brick niches which it is intended to furnish with busts, and at each end of the building are stone plaques in which full size statues can be placed. It is to be hoped that some generous citizen may make it possible to represent here those two benefactors to mankind — Pasteur and Lister.



The Entrance Hall, Royal Australasian College of Surgeons.

Internally the building has been treated in a simple manner and for the greater part has been left unfinished. Nevertheless, even at this stage the dignity of the proportions makes it possible to gauge the unusual quality of this distinctly modern building.

The entrance hall leads to the council chamber on the northern side, to the east a lecture hall to seat 250 people, and to the west the offices and library. The staircase in the west wing leads down to a lower floor, advantage having been taken of the fall across the block to secure this additional accommodation, which is occupied by the museum, a hall capable of seating 220 people if the occasion demands. The staircase down is lined with terrazzo slabs and has a polished steel balustrade. In contrast to this highly finished stair is the simple wooden stair which leads to the first floor. This floor is unfinished at the present time, but in the future, when in use, will double the accommodation provided now and will provide research rooms for post-graduate work.

The furniture and furnishings throughout the building are plain and it is only in the council chamber that special furniture has been designed.

Although much time and study have been devoted to the building and its detail, behind the conception was the thought that this prominent building had to respect its surroundings and link up with the parklands around it. It had to be designed as an integral part of the larger scheme in which Parliament House, the Treasury and the Exhibition, with their gardens, were such worthy units.

ANNUAL MEETING.

The annual meeting was held from Monday, March 4, to Saturday, March 9, 1935. It was a noteworthy gathering on account of the number of surgeons who came from overseas to represent many organizations in connexion with the opening of the College building.

The annual meeting was inaugurated on the evening of March 4 in the Wilson Hall, University of Melbourne. The President, Sir Henry Newland, occupied the chair, and he had with him on the dais His Excellency the Lieutenant-Governor of Victoria, Sir William Irvine, members of the Council of the College, distinguished overseas visitors and the G. A. Syme orator, Professor F. Wood Jones.

In declaring the meeting open, Sir William Irvine welcomed representatives from overseas and Fellows of the College from other States. He said that the people of Victoria appreciated the compliment to the City of Melbourne in its having been chosen as the site of the first residence of the College. This did not in any way detract from the purely Australasian character of the College.

Admission of New Fellows.

The President admitted new Fellows of the College in the following groups:

Fellows Elected Prior to April, 1933.

Victoria: Charles William Bennett, Carl Vivian Stephens.

Fellows Elected in 1934 under New Regulations.

New South Wales: Eric Hyman Goulston, Robert James Wherry Malcolm.

New Zealand: Donald Dixon McKenzie.

Victoria: Thomas King, Charles Bernays Melville, Henry Anthony Phillips, Henry Newman Mortensen, John Forbes Cock Mackenzie, Cecil Ashley Marshal Renou.

Fellows Elected in 1935.

New South Wales: Edward William Buckley, George Grafton Lees Stening.

South Australia: Alec Letts Dawkins.

Victoria: Albert John William Ahern, David Officer Brown, Edward Woodall Gault, Paul Jones, Eric Evan Price, John Burstall Turner, John Grieve Whitaker, Roy Douglas Wright.

Fellows in Ophthalmology.

Victoria: Esme Vivienne Anderson, William Mitchell Box, William John Laurence Duncan.

Fellows in Laryngo-Otology.

Victoria: Arthur Barton Pilgrim Amies, Cecil Nathaniel Love Cantor, Jean Littlejohn, Thomas Gillis Wynne.

Admission of Honorary Fellows.

The following were admitted as Honorary Fellows: Sir Holburt Waring (London), Sir D'Arcy Power (London), Henry Wade (Edinburgh), Donald Church Balfour (United States of America), Edward William Archibald (Canada), John Fraser (Edinburgh), Dean Lewis (United States of America), Charles Frederick Morris Saint (South Africa), Frederick Wood Jones (Melbourne).

Greetings from Overseas.

Sir Holburt Waring delivered a message of greeting from the Royal College of Surgeons of England.

Dr. Henry Wade, Senior Member of the Council of the Royal College of Surgeons of Edinburgh, read a message from his Council. He also, in the name of his Council, admitted Sir Henry Newland as an Honorary Fellow of the Royal College of Surgeons of Edinburgh and presented him with the certificate of his election.

Dr. Donald C. Balfour delivered a message from the American College of Surgeons.

Professor E. W. Archibald conveyed the greetings of the Royal College of Surgeons of Canada.

Presentation of the Jacksonian Prize.

In presenting the Jacksonian Prize of the Royal College of Surgeons of England to E. S. J. King, of Melbourne, Sir Holburt Waring said that this prize had been won three times by Australians. Dr. Harold Dew had won it in 1923, and Dr. King had won it twice—in 1930 and on the present occasion. The prize, which was instituted in 1800, had seldom been won on more than one occasion by the same person.

The Syme Oration.

Professor F. Wood Jones delivered the Syme Oration for 1935. The title of the oration was "The Master Surgeon".

The Library, Royal Australasian College of Surgeons.

The period of the master surgeon lay between the years 1550 and 1850. Even if this period was not that in which surgery attained its greatest heights, it at least produced the greatest master surgeons. Professor Wood Jones spoke of the dexterity and skill of these men, of their love of humanity and of their tireless energy and capacity for work. He pointed out that the master surgeons were all master anatomists—they made anatomy a lifelong study and continued throughout their active lives to dissect and operate on the cadaver. They had an intense dislike to the performance of operations; to operate on the human body was something to be done almost as a confession of failure. Turning to antiseptic and modern aseptic surgery, with its safe and comfortable anæsthesia, Professor Wood Jones

said that operations were nowadays so easy and might be undertaken with such impunity that many medical graduates muddled along in safety. He had a dream, admittedly an academic one, that the day of the master surgeon might dawn again, that surgeons would strive to emulate the master surgeon of olden days, and that all save emergency operations would be performed by a master hand. He expressed the opinion that clinical teachers should continually search for students who showed promise of developing the qualities of the master surgeon and that every effort should be made to help such students and to train them in the science and art of surgery.

Election of Office-Bearers.

Later on, in the course of the annual meeting, office-bearers were elected.

Sir Henry Newland intimated that he did not wish to seek reelection, and Dr. R. B. Wade was elected President.

The Council placed on record its keen appreciation of Sir Henry Newland's efforts during his six years' tenure of office.

Other office-bearers were elected as follows:

Vice-Presidents: Sir Louis Barnett, H. B. Devine.
Censor-in-Chief: Alan Newton.
Honorary Secretary and Treasurer: Julian Smith, Junior.
Honorary Assistant Secretary: G. R. A. Syme.
Executive Committee: R. B. Wade, H. B. Devine, A. L. Kenny, Alan Newton, Julian Smith, Junior.
Honorary Librarian: G. R. A. Syme.

The following State and Dominion committees were elected:

New South Wales: A. J. Aspinall, George Bell, H. R. Dew, B. T. Edye, J. W. S. Laidley, Sir John McKelvey, Guy Antill Pockley (Council members, *ex officio*, R. B. Wade, H. R. G. Poate, F. P. Sandes).
Queensland: A. G. Anderson, H. S. McLelland, J. C. Hemsley, A. V. Meehan, W. N. Robertson, Neville G. Sutton (Council member, *ex officio*, E. D. Ahern).
South Australia: A. M. Cudmore, H. M. Jay, I. B. Jose, L. C. E. Lindon, Bronte Smeaton, T. G. Wilson (Council member, *ex officio*, Sir Henry Newland).
Tasmania: F. W. Fay, J. Bruce Hamilton, D. H. E. Lines.
Victoria: Victor Hurley, Fay Maclure, R. H. Morrison, J. Newman Morris, C. Gordon Shaw, J. H. Shaw, B. T. Zwar (Council members, *ex officio*, H. B. Devine, A. L. Kenny, Alan Newton, Balcombe Quick).
Western Australia: F. J. Clark, H. B. Gill, D. D. Paton.
Dominion of New Zealand: Sir Hugh Dyke Acland, Professor F. Gordon Bell, F. S. Batchelor, Sir Donald McGavin, Sir Carrick Robertson, D. S. Wylie (Council member, *ex officio*, Sir Louis Barnett).

Election of Fellows.

At its meeting on March 3, 1935, the Council elected new Fellows. Most of those who were elected were formally admitted to Fellowship at the inaugural meeting. The following were elected but not formally admitted to Fellowship:

New Zealand: Henry Walden Fitzgerald.
Queensland: Mervyn Harrie Elliot Smith.
Tasmania: Cecil Bryden Berryman.
Victoria: Frederick John Orr Colahan.

Correspondence.

ADRENALINE IN THE TREATMENT OF PNEUMONIA.

SIR: I was flattered that my *résumé* of our cases of influenzal bronchopneumonia should receive such attention, and must thank Dr. Rundle for his courtesy in voicing his criticism. He is a far more competent and erudite physiologist than I and, therefore, I, with the whole profession, must subscribe to his arguments relating to the inefficacy of adrenaline as a vasomotor stimulant in the normal individual.

Personally, I cannot imagine that anyone would oppose the well grounded and recognized statements concerning adrenaline in the normal human being. I must, however, in reviewing these cases, point out that we did not consider the circulation in these cases normal. In fact we consider that adrenaline has an effect on a pathological circulation such as we believe exists in these cases. If Dr. Rundle's statements apply to the circulation in the abnormal, I am forced to review my very constant findings in the performance of Marie's test for the adrenaline insufficiency of Addison's syndrome. Further, clinically, I am hard to persuade that there is any wide difference between the vasomotor depression of Addison's disease, diphtheria and influenzal bronchopneumonia. Feeling that some effect was produced by adrenaline, we sought only to prolong such an effect, and in a second series of cases used ephedrine, but we were not impressed with our results.

No one who has treated such cases would take Dr. Rundle's enumeration of adrenaline's disadvantages seriously, apart from its effect on katabolism.

I am sorry if we follow a forlorn hope, but perhaps it is another case of fools rushing in, and we are off on another vasomotor scent forthwith. This letter smacks more of clinical impressions than scientific facts, but the sparseness of scientific literature on the circulation in disease renders quotation difficult.

Yours, etc.,

K. W. STARR,
Medical Superintendent,
Newcastle Hospital.

Newcastle,
New South Wales,
March 4, 1935.

FRUIT AS A CAUSE OF BOILS.

SIR: The letter in the last issue on the above subject reminds me of the following.

Nearly forty years ago I spent seven months on a lonely coral island in the South Seas. I was in the habit of including in my breakfast a large plate of porridge. I was soon informed by a trader that I would be "having boils all over" if I continued.

On that island water was very scarce; one had to depend entirely on rain water. I thus soon "went native" and drank the milk of some fifteen green coconuts a day. A beach-comber then informed me, quite confidentially, that if I did not give it up I would "get the clap, as sure as eggs were eggs".

And these eggs remind me of still another story. In order to save water I used to boil my eggs for breakfast in the water that was being boiled for the tea. Another person, who also seemed greatly concerned with my welfare, informed me that it would give me a "crop of warts on my nose".

I continued with my evidently unorthodox habits and came through without a scratch.

Yours, etc.,

ALFRED FINCKH.

227, Macquarie Street,
Sydney,
March 6, 1935.

THE "CHEST" PHYSICIAN AND THE RADIOLOGIST.

SIR: The conflict between the "chest" physician and the radiologist continues without end: its origin is as obscure as that of the guerilla warfare now disturbing the peace of El Gran Chaco. But of the outcome there can be no doubt.

To maintain his self-respect, and in fairness to both the welfare of his patients and his own professional reputation, it is imperative that the physician be placed in the position of final arbiter as to the interpretation of X ray findings.

What many a radiologist fails to recognize is that he is called upon as one of a number of specialists to perform a special examination. In his case the examination involves the use of expensive apparatus, the handling of which requires a certain amount of technical knowledge. He is asked to render a report embodying the results of this examination, that is, to state what he has seen. Most assuredly he is not expected to establish beyond doubt a pathological diagnosis nor to transgress into the realms of prophetic utterance.

The intelligent physician will see to it that when, having collected his evidence, he proceeds to apply the synthetic method in making his diagnosis, he assesses each item at its correct value.

We quote at random two reports from a large number received from radiologists on X ray examination of the chest. In each case the italics are ours.

1. "The films show the pleurisy and fluid at the right base, passing up into the axilla. There is no evidence *yet* of any parenchymatous lesion in the lung fields, but the pleuritic *infection* is *undoubtedly* a *tuberculous* one."

2. "On screening him there was some increased density above the aortic arch, and also spreading out from the right hilum towards the base. The films confirm this shadow above the aorta, especially in the lateral view, and the appearances *almost certainly* indicate a neoplasm. Such a condition in this region is probably connected with the remains of the thymus, and they are *frequently sarcomatous or endotheliomatous*. The density spreading out from the right hilum is very sharply defined, and in the lateral view there is evidence of fibrosis along the interlobar plane spreading out into the lung parenchyma. *This also suggests a neoplasm, but most likely a carcinoma.* It seems, therefore, very probable that he has a double lesion. *I think deep therapy should be tried; this we can carry out.*"

In conclusion, perhaps the words of Osler may be quoted: "More than any others, radiologists need the salutary lessons of the dead-house to correct their visionary interpretations of shadows."

Yours, etc.,

". . . ANGELS FEAR TO TREAD."

Melbourne,
March 12, 1935.

MATERNAL MORTALITY.

SIR: May I draw the attention of your readers to Professor Strachan's article on this subject which appeared in the January 26 issue of *The British Medical Journal*, page 175. This article draws pointed reference to the danger of incorrect statistics being recorded by including abortion and miscarriage cases in maternal mortality statistics, as required by present international classification.

It also emphasizes that a fear complex may be developed unnecessarily in the community by referring to unpreventible causes of the condition, such as by interference by the patient herself, this being a matter for education and preventive medicine rather than for actual confinement attention.

The latter, I maintain, can be perfectly efficiently treated by the highly skilled general practitioners of the present day.

He also deprecates the multiplication of baby, ante-natal, post-natal and other clinics, preferring to rely on the pre- and post-natal attention of the general practitioner, with which I thoroughly agree.

Yours, etc.,

H. T. ILLINGWORTH, M.B., Ch.M.,
Medical Superintendent,
Morgan District Hospital,
South Australia.

March 18, 1935.

THE WHITE MAN IN THE TROPICS.

SIR: Sir Raphael Cilento's reference to my letter really conveys the obvious answer to his question.

From the western border of Queensland to the Indian Ocean, north of the Tropic of Capricorn, there are only 6,400 Europeans, and yet £17,000,000 have been spent on the Northern Territory alone.

Experts inform me that cattle and sheep, as we know them, will not breed satisfactorily in the Northern Territory, and naturally the objective is to find animals which the country suits. An expert investigation into the conditions on the south coast of Java would be useful, as it is stated that the soil and climate are similar to the soil and climate in the Northern Territory, and the Javanese do not settle there.

Something may be done with tropical Australia, west of the Queensland boundary, but the solution will be found by scientific and not by political methods.

Yours, etc.,

JAMES W. BARRETT.

103-105, Collins Street,
Melbourne,
March 16, 1935.

Naval, Military and Air Force.

ROYAL ARMY MEDICAL CORPS.

AT the request of Colonel R. M. Downes, Director-General of Medical Services of the Commonwealth, the following information is published regarding the conditions of service in the Royal Army Medical Corps.

1. All officers joining will, in the first instance, be given a short service commission for five years, at the end of which period an officer will be given an option of either (*a*) retiring with a gratuity of £1,000 or (*b*) applying for a permanent commission.

2. Those retiring with a gratuity after five years' service will be liable to be called up for duty in the event of a national emergency arising during the twelve years following their retirement.

3. Permanent commissions will be given to officers selected from among those who wish to make the Army their permanent career. The selection, which will be made at the War Office, would be based on an officer's professional zeal and attainments, and on his suitability for the service as disclosed by his annual confidential reports, which are always shown to him at the time they are written. The number of permanent commissions given each year will be regulated so as to insure adequate prospects of promotion.

4. The pay and allowances at home stations are shown in detail in Regulations for Admission to the Royal Army Medical Corps.

The rates of pay (in rupees) in India are generally appreciably higher than the corresponding rates for officers serving at home, a lieutenant receiving approximately £48 a month, and a captain approximately £60 a month.

Pay in the colonies is the same as at home, but the rates of allowances are varied to suit the local conditions and, in addition, colonial allowance is given, the amount of which varies with each colony.

5. Officers will be promoted to the rank of captain after one year's service, and to the rank of major after ten years' service. Promotion to the ranks of lieutenant-colonel and colonel will be by selection to fill vacancies within the establishment, which is designed to allow promotion to those ranks, on the average, after seventeen years and twenty-five years respectively.

6. With a view to encouraging young officers to fill house appointments in civil hospitals before or immediately after entering the service, the period of such appointments, not exceeding twelve months, is allowed to count towards seniority, promotion to major, increments of pay dependent on total service and pension, but is not included in the five

years' actual service required to qualify for the gratuity and the one year required for promotion to captain.

7. The career of a short-service commissioned officer will be, briefly, as follows:

(*a*) He will first attend a two months' course at the Royal Army Medical College, London, where instruction will be given in entomology, tropical medicine *et cetera*. While at the College he will fit himself out with uniform, for which he receives a grant of £50.

(*b*) He will then proceed to the Royal Army Medical Corps Depôt, Crookham, Aldershot, for one month's course in drill, army organization, medical arrangements in war, riding, and practical sanitation at the Army School of Hygiene. At the end of this course he would normally be posted for duty to one of the large military hospitals or one of the women and children's hospitals at home, where, in addition to work in the wards, he will obtain practical experience in such duties as medical charge of a regiment, sanitary inspection of barracks *et cetera*. On being posted for duty to a military hospital, officers will, as far as possible, be allotted duties in that branch of the profession in which they are most interested.

(*c*) After a short period at a home hospital officers would proceed for a tour of service abroad, where the duties would be similar to those mentioned at 7 (*b*).

8. The foreign tour in India, Egypt or the Mediterranean stations is five years, that of the colonies three years, but in the case of those officers retiring on a gratuity after five years' service, arrangements would be made for them to return to England at the public expense by the end of that period. (Note: The first foreign tour of a young officer is generally considered to be one of the most interesting and enjoyable periods of an army career.)

9. For the present entry an army entrance examination is dispensed with, but an examination will be held at the termination of the two short courses referred to in paragraph 7.

10. It is anticipated that two groups of officers will commence their course at the Royal Army Medical College on May 1 and November 1 respectively.

The next group will assemble on May 1, 1935.

Prospective candidates should apply for further information to the Deputy-Director of Medical Services in the State in which they reside.

Obituary.

ALEXANDER WILSON.

THE following appreciation of the late Alexander Wilson has been forwarded by "F.A.P.":

Died last week in the Royal Prince Alfred Hospital Alexander Wilson, affectionately known to all as "Sandy". It was grim, but perhaps fitting, irony that he who had given a lifetime of service in the operating theatre should have himself been taken from there to his death bed. He came to the hospital as a young man, and occupied with conspicuous ability and devotion the responsible position of instrument clerk and attendant at operations for forty-seven years. He retired a few years ago and was given a presentation and farewelled by an appreciative staff. He saw the hospital grow from its comparatively small beginning to its present size and importance, and attended the long processions of surgeons at their operations. He must have attended and assisted at tens of thousands of operations. It has been said of him, and with truth, that, from his long experience and intimate knowledge of the stages of every operation, he would have been able to carry through an operation as well as most surgeons. Thousands of students and nurses have to thank him for willing instruction in the use of the various surgical instruments and appliances.

As a man he was universally liked and respected. Never obsequious, never presuming, but always commanding respect, capable, efficient, reliable, never ruffled, always calm, and ready when things were going wrong, he was a man to "tie to". He was never sick or sorry, always on the job, bright and cheerful and keen. Familiarity with operations had not made him callous. He had a great fund of the milk of human kindness. He never regarded the patient as a mere "case", but as a human sufferer. His cheery assuring smile and pat on the shoulder cheered, soothed and encouraged many a terrified patient about to be anæsthetized. If from any cause he was not there I personally always felt vaguely a sense of loss, knowing he was not standing behind me ready to give prompt help in any emergency. His life was one of service, not only in peace, but also in war. He went through both the South African and the Great War as a non-commissioned officer in the Army Medical Corps, where he showed characteristic efficiency and devotion. His recreations were, like himself, simple—line fishing, at which he was an artist, bowls, of which he was a great exponent, and debating. If ever there was the right man for his job, it was "Sandy" Wilson, and he surely deserves that his memory should be perpetuated in the institution in which he played so important a part. It might well be said of him that "the elements were so mixed in him that Nature might stand forth and say to the world: 'This was a man'." Vale "Sandy"!

University Intelligence.

THE UNIVERSITY OF MELBOURNE.

Post-Graduate Medical Diplomas.

COURSES of instruction in anatomy and physiology for Part I of the examination for the Diplomas of Ophthalmology, Laryngology and Otology, and Gynæcology and Obstetrics will be conducted by the University of Melbourne during the second term, provided that there are at least three entries for each class. Subject to the same condition, instruction may be given in the subjects of Part I of the course for the recently instituted Diplomas of Diagnostic Radiology and Therapeutic Radiology and Electricity.

Intending students should forward their names to the Registrar, University, Melbourne, N.3, as soon as possible. They will not be required to lodge a formal entry or pay fees until the question of the classes to be held has been decided. The courses of instruction at the University will not commence until Monday, June 10, but attention is drawn to the fact that the courses as a whole involve a year's special hospital work, which should be commenced as early as possible.

Further particulars may be obtained on application to the Registrar.

THE UNIVERSITY OF SYDNEY.

A MEETING of the Senate of the University of Sydney was held on March 18, 1935.

Mr. D. F. Stewart, B.V.Sc., was reappointed as Walter and Eliza Hall Research Fellow in Veterinary Science. (Mr. Stewart is at present carrying out research work in England.)

The Dr. John Osborne, R.N., Scholarship was awarded to Mr. P. O. Bishop. (This scholarship is awarded for general proficiency at matriculation to a student from Saint Paul's College entering the Faculty of Medicine.)

It was resolved to approve in principle of an extension from four to five years of the curriculum leading to the degree of Bachelor of Veterinary Science. It is anticipated that such extension will commence to operate in 1937.

The ceremony of matriculation was fixed for Friday, April 26, 1935, at 4 p.m.

The following dates were fixed for the annual conferring of degrees: Saturday, May 4 (Faculty of Arts), and Saturday, May 18 (for other faculties).

The following appointments were approved: Dr. A. W. Morrow as part-time Demonstrator in Physiology; Mr. C. White and Mr. J. H. Priestley as Student Demonstrators in Physiology.

THE ERIC JEFFREY PRIZE.

The sum of three guineas has been received from Dr. W. L. Crowther, of Hobart, for the Eric Jeffrey Prize Fund.

Books Received.

THE COMPLEAT PEDIATRICIAN: PRACTICAL, DIAGNOSTIC, THERAPEUTIC AND PREVENTIVE PEDIATRICS FOR THE USE OF MEDICAL STUDENTS, INTERNES, GENERAL PRACTITIONERS AND PEDIATRICIANS, by W. C. Davison, M.A., D.Sc., M.D.; 1934. Durham: Duke University Press. Royal 8vo.

THE CURE OF HÆMORRHOIDS AND VARICOSE VEINS, by S. McAusland, B.A., M.D., Ch.B., M.R.C.S., L.R.C.P.; 1934. London: John Bale, Sons and Danielsson, Limited. Demy 8vo., pp. 85, with illustrations. Price: 4s. net.

Diary for the Month.

Apr. 1.—New South Wales Branch, B.M.A.: Organization and Science Committee.
Apr. 2.—Tasmanian Branch, B.M.A.: Council.
Apr. 2.—New South Wales Branch, B.M.A.: Council: Election of Officers and Standing Committees.
Apr. 3.—Western Australian Branch, B.M.A.: Council.
Apr. 3.—Victorian Branch, B.M.A.: Branch.
Apr. 4.—South Australian Branch, B.M.A.: Council.
Apr. 5.—Queensland Branch, B.M.A.: Branch.
Apr. 9.—Tasmanian Branch, B.M.A.: Branch.
Apr. 9.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
Apr. 11.—New South Wales Branch, B.M.A.: Clinical Meeting.
Apr. 11.—Victorian Branch, B.M.A.: George Adlington Syme Memorial Lecture.
Apr. 12.—Queensland Branch, B.M.A.: Council.
Apr. 16.—New South Wales Branch, B.M.A.: Ethics Committee.
Apr. 16.—Tasmanian Branch, B.M.A.: Council.
Apr. 17.—Western Australian Branch, B.M.A.: Branch.
Apr. 23.—New South Wales Branch, B.M.A.: Medical Politics Committee.
Apr. 24.—Victorian Branch, B.M.A.: Council.
Apr. 24.—New South Wales Branch, B.M.A.: Branch.
Apr. 25.—South Australian Branch, B.M.A.: Branch.
Apr. 26.—Queensland Branch, B.M.A.: Council.

Medical Appointments.

Dr. W. Christie (B.M.A.) has been appointed Principal Medical Officer on the Advisory Council of Education, South Australia, under the *Education Act*, 1915.

* * *

Dr. J. Dale (B.M.A.) has been appointed a Member of the Dental Board of Victoria, pursuant to the provisions of Section 38 of the *Medical Act*, 1928.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser", pages xiii, xiv, xv.

Children's Hospital (Incorporated), Perth, Western Australia: Junior Resident Medical Officer.
Department of Mental Hygiene, Melbourne, Victoria: Junior Medical Officer.
Liverpool State Hospital, Liverpool, New South Wales: Honorary Ear, Nose and Throat Surgeon.
Public Service Board, Sydney, New South Wales: Junior Resident Medical Officers.
Royal North Shore Hospital of Sydney, New South Wales: Honorary Officers.
Royal Society for the Welfare of Mothers and Babies, Sydney, New South Wales: Junior Honorary Medical Officer.

Medical Appointments: Important Notice.

Medical practitioners are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
New South Wales: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
Victorian: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
Queensland: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associate Friendly Societies' Medical Institute. Chillagoe Hospital. Members accepting LODGE appointment and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
South Australian: Secretary, 207, North Terrace, Adelaide.	Officer of Health, District Council of Elliston. All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
Western Australian: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
New Zealand (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

Manuscripts forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to The Medical Journal of Australia alone, unless the contrary be stated.

All communications should be addressed to "The Editor", The Medical Journal of Australia, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

Members and subscribers are requested to notify the Manager, The Medical Journal of Australia, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such a notification is received within one month.

Subscription Rates.—Medical students and others not receiving The Medical Journal of Australia in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad *per annum* payable in advance.